Technical Study 18
**CANADIAN LABOUR MARKETS IN
THE 1980s:
A MACROECONOMIC OVERVIEW**
Informetrica Ltd.
July 1981

This is one in a series of technical studies prepared
for the Task Force on Labour Market Development. The
opinions expressed are those of the author and do not
necessarily reflect those of the Task Force. They do
not reflect the views of the Government of Canada.

ABSTRACT

CANADIAN LABOUR MARKETS IN THE 1980s
A MACROECONOMIC OVERVIEW

Informetrica

The purpose of this study is to provide an overview of
labour force demand and supply conditions as they are likely
to emerge over the next decade. The outlook for labour
market conditions is not independent of the broad
macroeconomic developments facing the Canadian economy.
Thus the report begins by projecting economic performance in
Canada over the coming decade. The projection must focus not
only on the overall size and growth rate of the economy, but
also on changes in its structural composition. To this end
the Informetrica Model, a large simultaneous macroeconomic
model similar in structure to the CANDIDE family of models,
has been used to produce a detailed projection for the
Canadian economy to 1990.

The use of a large simultaneous model has certain strong
advantages. It makes it possible to incorporate a large
amount of information which includes not only measurements of
past economic activities, but also estimations of the
relationships between various economic activities, based
largely upon well-established economic theory.

The model also ensures internal consistency across all
information through an embedded accounting framework. It
also provides a formal framework, so that the results
obtained can be reproduced, the way they were produced can be
examined and interpreted and the impact of new or different
information on the projection can be tested.

The purpose of this study is not an attempt to forecast the future, but rather to develop a systematic planning framework which reflects the interdependencies of different sectors of the economy. This requires many assumptions, which reflect best guesses based on currently available information concerning future economic developments. If the uncertainty inherent in these assumptions is accepted, then it is desirable not only to have a planning framework, but also to understand the sensitivity of this framework to changes in assumptions.

Two reference cases were therefore produced. These represent a range of possible futures within which the aggregate performance of the Canadian economy will most likely lie during the 1980s. The slow-growth case represents a view of relatively modest economic expansion and relatively strong inflation, while the fast-growth case describes a path of rapid economic expansion with correspondingly greater strains on labour markets. Because of its characteristic of tighter labour markets, this second reference case was used as a base from which to examine the implications for Canadian labour markets of potential economic shocks.

Four alternative scenarios were also produced, in which key assumptions have been changed from the base case. By comparing these scenarios to the base the sensitivity of the Canadian economy, and labour markets, to particular uncertainties was examined.

The report provides a brief overview of the macroeconomic environment of the reference planning frameworks and a detailed analysis of their labour market implications. It briefly outlines each of the scenarios and compares the differences of each scenario from the base case. It concludes with a review of some of the major areas of uncertainty in the economic planning framework and labour market outlook and a summary of potential problem areas.

Major economic indicators of the reference planning
frameworks are summarized in the following table.

Macroeconomic Framework

(average annual per cent rate of growth)

	Fast-Growth Case		Slow-Growth Case	
	1980-85	1986-90	1980-85	1986-1990
Real GNP	3.2	3.7	2.7	3.6
CPI	7.4	5.9	8.4	6.1
Productivity	1.0	1.5	0.8	1.6
Labour Force	2.0	1.8	2.0	1.8
Employment	2.2	2.1	1.9	1.8
Unemployment Rate (end of period)	6.6	4.9	7.9	7.2

The fast-growth reference view is characterized by a
strong recovery from the weak growth in 1980 and 1981. The
recovery is based upon an expansion of trade resulting from a
U.S. economic recovery and the start of a relatively strong
investment cycle. Inflation, after running at roughly 10
per cent in 1980 and 1981, is expected to moderate through
the first half of the 1980s to an average rate of around 6
per cent per year for the second half of the decade. That
framework for real growth generates employment growth
averaging 2.2 per cent over the 1980-85 period and over 2.0
per cent per year through 1990. Combined with labour force
growth averaging 2.0 per cent and 1.8 per cent respectively,
this leads to a gradual decline in unemployment rate to just
under 5 per cent in 1990.

For the slow-growth case the principal difference in the
economic environment for the 1980s is that the recovery
period in the first half of the decade exhibits considerably
less robust overall growth, combined with higher inflation.
This results in weaker employment growth and in only a small
decline in the unemployment rate.

LES MARCHÉS DU TRAVAIL CANADIENS DANS LES ANNÉES 1980
APERÇU MACRO-ÉCONOMIQUE

Informetrica

L'étude vise à donner un aperçu de la courbe de la demande et de l'offre de main-d'oeuvre qui se dessinera probablement au cours de la prochaine décennie. Les perspectives du marché du travail ne sont pas indépendantes de l'évolution de la situation macro-économique que connaîtra l'économie canadienne. Par conséquent, nous commençons par des projections sur le rendement de l'économie canadienne au cours de la prochaine décennie. Nos projections doivent porter non seulement sur la taille globale et le taux de croissance de l'économie, mais aussi sur les transformations de sa composition structurelle. A cette fin, nous avons utilisé le modèle Informetrica, grand modèle macro-économique simultané semblable, de par sa structure, à la famille de modèles CANDIDE, pour produire des projections détaillées sur l'économie canadienne jusqu'en 1990.

L'utilisation d'un grand modèle simultané présente des avantages certains. Il nous permet entre autres d'incorporer toute une masse d'informations qui comprennent non seulement des mesures de l'activité économique passée, mais aussi des estimations concernant les liens entre les diverses composantes de l'activité économique, fondées en grande partie sur une théorie économique bien établie.

Le modèle garantit également l'uniformité de toutes les données utilisées grâce aux cadres comptables qui y sont intégrés. De plus, le modèle fournit un cadre officiel permettant de reproduire nos résultats, d'examiner et d'interpréter les façons dont ils ont été produits et de tester les effets de données nouvelles ou différentes sur nos projections.

En établissant nos projections, nous n'avons pas essayé de prédire l'avenir, mais bien de mettre au point un cadre systématique de planification qui traduit l'interdépendance de différents secteurs de l'économie. Nous devons à cette fin nous appuyer sur un grand nombre d'hypothèses qui traduisent les meilleures estimations possible établies à partir des renseignements actuellement disponibles concernant l'évolution future de l'économie. Si nous acceptons l'incertitude inhérente à ces hypothèses, il est alors souhaitable non seulement de disposer d'un cadre de planification, mais aussi de comprendre que ce cadre est sensible aux variations de ces hypothèses.

Nous avons donc élaboré deux cas types. Ils représentent une gamme de situations possibles dans lesquelles, selon nous, évoluera fort probablement le rendement global de l'économie canadienne au cours des années 1980. Le scénario de croissance lente suppose une expansion économique modeste et une inflation relativement forte, tandis que le scénario de croissance rapide fait état d'une expansion rapide de l'économie canadienne accompagnée de pressions plus grandes sur les marchés du travail. En raison des marchés du travail plus restreints que ce scénario suppose, nous l'avons utilisé pour examiner les répercussions sur les marchés du travail du Canada qui pourraient être marqués par des transformations économiques soudaines.

Nous avons établi quatre scénarios où les hypothèses principales diffèrent du cas type. En comparant ces scénarios à notre cas type il nous a été possible d'examiner la sensibilité de l'économie canadienne et des marchés du travail à certaines incertitudes.

Notre étude donne un bref aperçu du milieu macro-
économique des cadres de planification de base et comprend une
analyse détaillée de leurs répercussions sur le marché du
travail. Il décrit brièvement chacun des quatre scénarios et
compare les différences de chacun par rapport au cas type.
L'étude se termine par un examen de certains des grands domaines
d'incertitude liés au cadre de planification économique et aux
perspectives du marché du travail et par un sommaire des
problèmes éventuels qui pourraient surgir dans certains
domaines. Des tableaux récapitulatifs pour chaque scénario
figurent en appendice.

Le tableau qui suit rassemble les principaux indicateurs
économiques des cadres de planification.

Cadre macro-économique
(taux de croissance annuel moyen, en pourcentage)

	Croissance rapide		Croissance lente	
	1980-1985	1986-1990	1980-1985	1986-1990
PNB réel	3.2	3.7	2.7	3.6
IPC	7.4	5.9	8.4	6.1
Productivité	1.0	1.5	0.8	1.6
Population active	2.0	1.8	2.0	1.8
Emploi	2.2	2.1	1.9	1.8
Taux de chômage (fin de la période)	6.6	4.9	7.9	7.2

Le scénario de croissance rapide se caractérise par une
reprise ferme par rapport à la faible croissance de 1980 et
1981. Cette hypothèse se fonde sur l'éventualité d'une
expansion du commerce suscitée par le rétablissement économique
des États-Unis et l'amorce d'un cycle relativement vigoureux
d'investissement. L'inflation, d'environ 10 % en 1980 et 1981
devrait diminuer pendant la première moitié de la décennie pour
s'établir à un taux moyen de 6 % par année pour la seconde
moitié. Cette croissance réelle suscite une croissance de
l'emploi de 2,2 % en moyenne pour la période 1980-1985 et de
plus de 2 % par année ensuite, jusqu'en 1990. A cela s'ajoute
une croissance de la population active de 2 % en moyenne pour la
première moitié et de 1,8 % pour la seconde, de sorte que le
taux de chômage fléchira progressivement à tout juste un peu
moins de 5 % en 1990.

Pour ce qui est du scénario de croissance lente, la
principale différence réside dans le fait que la reprise
envisagée pour la première moitié de la décennie sera
caractérisée par une croissance globale beaucoup moins
vigoureuse, combinée à un taux d'inflation plus élevé. La
croissance de l'emploi est donc plus faible et le taux de
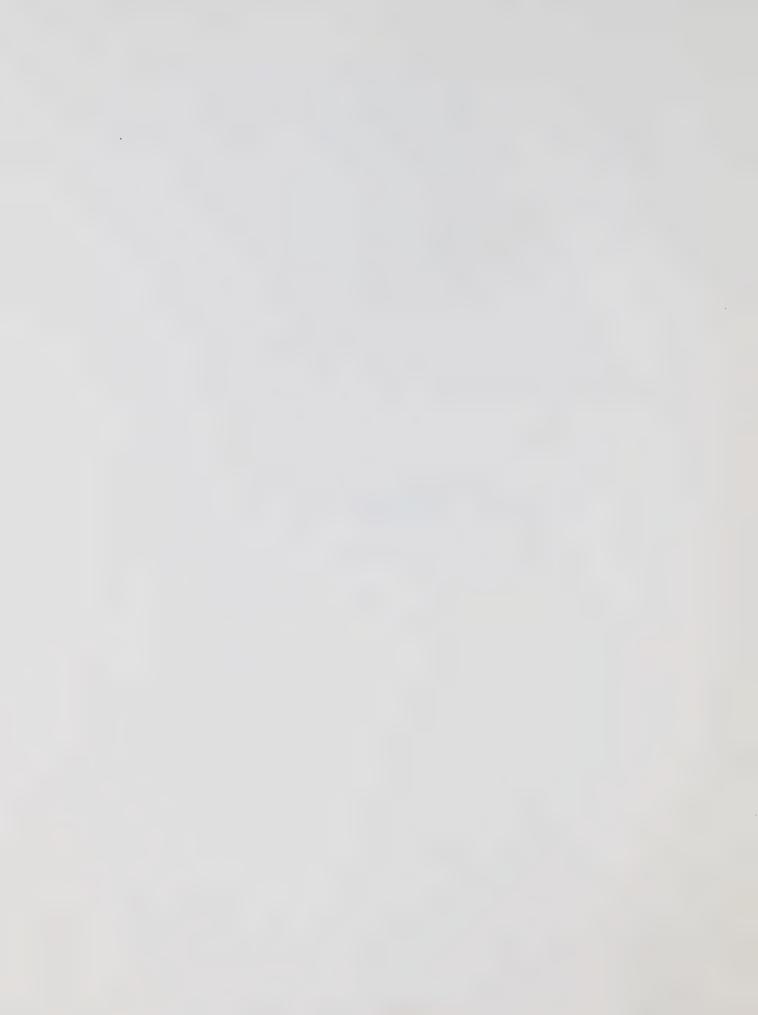chômage fléchit à peine.

Table of Contents

SECTION A

CANADIAN LABOUR MARKETS IN THE 1980s - A PLANNING FRAMEWORK

A. Introduction

The purpose of this study is to provide an overview of labour force demand and supply conditions as they are likely to emerge over the next decade. The outlook for labour market conditions is by no means independent of the broad macroeconomic environment facing the Canadian economy. Thus, in order to achieve our primary objective, we must begin by forecasting economic performance in the Canadian economy over the coming decade. Our forecast must focus not only on the overall size and rate of growth for the economy, but also on changes in the structural composition of the economy. To this end we have used The Informetrica Model (T.I.M.), a large simultaneous macroeconomic model similar in structure to the CANDIDE family of models, to produce a detailed forecast for the Canadian economy to the year 1990.

Do we need an elaborate model to produce a forecast? In fact, we do not need such a model, but the use of a large simultaneous model does have certain _very_ _strong_ _advantages_. Our forecasts of the future are based on information which we have today. The more information we have, the better the quality of our forecast is likely to be. One key advantage of a large simultaneous model is that it enables us to incorporate a very _large_ _amount_ _of_ _information_ in the process of developing our forecast. This information includes not only measurements of economic activity in the past, but also estimations of the

relationships and interrelationships between various economic activities based upon (for the most part) well-established economic theory.

A second attribute of models is that they ensure, through embedded accounting frameworks, internal consistency across all the information within the model. Thus, we can have confidence that our outlook for employment in the trade sector is consistent with our outlook for consumer expenditure which, in turn, is consistent with an estimate of income based on our outlook for total employment and labour force. A third advantage is that, because it provides a formal framework, we can reproduce our results, examine and interpret how these results were produced, and test the impacts of new or different information on our forecast.

But can we, in fact, predict the future? Unfortunately, with all its advantages, there is still no magic in our model. If we could make "true" predictions, this would imply that there is only one possible (and predetermined) future. Decisions made over the course of the future would be sterile in that they could not alter the predetermined course of events, and planning and public policy action would be redundant. We strongly believe that decisions implemented today can alter the future behavior of the economy, and that decision-makers in all sectors of the economy, and outside the Canadian economic milieu, are not bound to predetermined actions. Thus, we must believe, that the future is unpredictable.

Why then do we produce a forecast? The process (and rationale) may be clarified if we change our terminology. Rather than forecasting the future, we are, in fact, developing a systematic planning framework, which reflects the interdependencies between different sectors of the economy. To do this we must make a large number of assumptions concerning a wide range of future decisions. Our forecast, or planning framework, is thus conditional on our initial set of assumptions. These assumptions reflect our best guesses (based on currently available information) concerning uncertainties about the future development of the economy. If we accept the uncertainty inherent in these assumptions, then it is desirable not only to have a planning framework, but also to understand the sensitivity of this framework to changes in our assumptions.

To this end we have produced two Reference Cases. These represent a range of possible futures within which we believe the aggregate performance of the Canadian economy is most likely to be during the 1980s. One (The Slow Growth Reference Case) represents a view of relatively modest economic expansion and relatively strong inflation, while the other (The Fast Growth Reference Case) describes a path of rapid expansion of the Canadian economy with correspondingly greater strains on labour markets. Because of its characteristic of tighter labour markets, we have used this second Reference Case as a Base Case from which to examine the implications for Canadian labour markets of potential shocks to the economy.

We have produced four Alternative Scenarios in which key assumptions have been changed from the Base Case. By comparing these scenarios to our Base Case, we can examine the sensitivity of the Canadian economy, and of Canadian labour markets, to particular uncertainties.

Just as neither of our Reference Cases represent a fixed "truth" about the future of the Canadian economy, our four Alternative Scenarios by no means exhaust the range of possible divergences from our Base Case. We have attempted to choose a set of Alternatives which would provide a "reasonable" range of economic conditions and changes.

The remainder of this report provides a brief overview of the macroeconomic environment of our Reference planning frameworks, and a detailed analysis of their labour market implications. It provides a brief outline of each of our Alternative Scenarios, and a comparison of the differences of each scenario from the Base Case. It concludes with a review of some of the major areas of uncertainty in the economic planning framework and labour market outlook and a summary of some potential problem areas. The Appendixes contain summary tables for each of the Scenarios.

SECTION B

B. Macroeconomic Planning Framework - Reference Cases

We have chosen two scenarios of the economic environ-
ment of the 1980s to use as Reference views for our examination
of labour force prospects. The first one (Slow Growth Reference)
represents a view of a relatively weak recovery from the current
recession and moderate growth over the remainder of the decade.
Governments move to improve their fiscal positions, weakening
real incomes, and labour markets remain relatively slack through-
out the decade. The principal vehicle used to improve government
balances is a rapidly increasing oil price (to world price
equivalency by 1985) which leads to a continuation of inflation
in the 7%-7.5% range through the mid-1980s. The revenues
generated from the rapid increase in oil prices, both to corpora-
tions and governments, are not, for the most part, recycled into
the economy, but are used to improve balance sheets (budgetary
positions). That is, relative to our second Reference view (see
below) a large amount of additional revenue is generated for
governments and corporations from higher oil and gas prices. It
is assumed that this additional revenue is not used to cut taxes,
increase transfer payments or increase other expenditures of
governments. Nor does it result in higher levels of investment by
corporations. This, of course, represents only one of a variety
of ways in which governments could move to improve their budgetary
positions, but, on the whole, can be viewed as representative
of a likely outlook for the Canadian economy in the 1980s under
a regime of government restraint.

The second Reference view (Fast Growth Reference) repre-
sents a view in which the recovery period in 1982-85 is consider-
ably more robust, and the Canadian economy moves more rapidly

Informetrica • Ottawa, Canada • Effective Economic Research
LIMITED

towards its potential growth path. Employment growth is stronger (as is productivity growth) so that labour markets become reasonably tight by the end of the decade (the unemployment rate drops to 6.6% by 1985 and to under 5% by 1990). The key difference from the Slow Growth Reference is that governments do not move as aggressively through energy price increases to improve their budgetary positions. Hence real incomes are higher and the recovery period stronger.

Wellhead Price for Oil ($ per barrel)

	1980	81	82	83	84	85	86	87	88	89	1990
Fast Growth Reference	17	21	25	29	33	37	41	45	49	53	57
Slow Growth Reference	17	22	29	36	45	55	60	66	72	76	81

Other than this difference, both Reference Cases start from a set of assumptions which either reflects existing policies and institutional frameworks, or represents close to a consensus view. A brief review of the major assumptions are presented below.

1. U.S. economic growth weak in 1980-81, averages 3% per year from 1982-90.

2. U.S. inflation moderating from 9.3% range in 1980-81 to 6.8% in late 1980s.

3. Rest-of-World growth averages 4%-5% per year to 1990.

4. World oil price rises by 2% more than increases in U.S. price deflator.

5. The Federal Government is assumed, through whatever mechanism, to realize 40% of any increased royalty revenue from oil and gas production.

6. Net immigration constant at 50,000 per year.

7. Exchange rate appreciates to 90¢ U.S. by 1984, remains at that level until 1989 when improved energy trade balance leads to further appreciation (to 94¢ U.S. by 1990).

Fast Growth Reference Overview

The Fast Growth Reference view is characterized by
very weak real growth in 1980 and 1981, followed by a moderately
strong recovery in 1982 and 1983. The recovery is based upon
an expansion of trade resulting from a U.S. economic recovery
and the start of a relatively strong investment cycle. The
investment growth is led by (but not confined to) developments
in the energy sector, and is moderated by continued weakness in
residential construction. In the second half of the 1980s, the
export sector shows the strongest growth with continuing strength
in nonresidential business investment. Growth in consumer
expenditure (about 3% per year) lags behind overall economic
growth as higher energy prices and government restraint mute the
growth in real disposable income. Government expenditure is
expected to grow quite slowly, declining as a share of total
economic activity from about 24% in 1978 to about 22% in 1990,
reflecting a continuation of current restraint policies.

Inflation, after running at roughly 10% in 1980 and
1981, is expected to moderate through the first half of the 1980s
to an average rate of around 6% per year for the second half of
the decade. Slower percentage increases in energy prices, lower
rates of change for import prices, a pick-up in productivity, and
continuing moderation in wage settlements are the key factors in
tempering inflation.

Our framework for real growth generates employment
growth averaging 2.5% per year from 1982 through 1985, and

over 2.0% per year through 1990. Combined with labour force growth averaging 2.0% and 1.8% respectively, this leads to a gradual decline in the unemployment rate from a peak of 8.3% in 1981 to just under 5.0% in 1990.

In all, it is a scenario in which the Canadian economy recovers from most of the problems with which we are faced in 1980 by the end of the decade, but the recovery is quite gradual and the economy operates well below its potential for most of the decade. No severe shocks (either positive or negative) are imposed on the economy which might slow down or speed up the process of gradual improvement.

Slow Growth Reference Case

For the Slow Growth Case the principal difference in the economic environment for the 1980s is that the recovery period 1982-85 exhibits considerably less robust overall growth (averaging 3.6% per annum vs 4.3%), combined with higher inflation rates as the oil price increases reduce real incomes and boost prices. The CPI increases at an average rate of 7.6% in the 1982-85 period compared to 6.3% in the Fast Growth Scenario.

Employment growth averages 2.0% in the recovery period (1982-85) and slows a bit to 1.9% per year for the remainder of the decade, while productivity growth averages about 1.8% over the decade. This results in only a small decline in the unemployment rate from the 1981 peak so that labour markets remain slack through to 1990.

All elements of final demand are lower in the Slow Growth Reference Case. Consumer expenditure (reflecting weaker real income growth) and government expenditures (reflecting the restrictive budgetary focus) are the most severely impacted. Investment remains as the strongest element of final demand and exports, although somewhat lower than in the Fast Growth Reference Case (because of higher domestic costs) is still a source of growth. Imports are also lower in real terms, reflecting slack domestic demand, but the effects of the higher domestic prices mutes the fall in imports.

The overall government balance turns positive in 1985 (compared to a deficit of almost $10 billion in the Fast Growth Reference Case) and by 1990, the government surplus is about $10 billion, most of which is accounted for by Canada/Quebec pension plan surpluses and surpluses of oil and gas producing provinces. The Federal Government budget remains in deficit throughout the 1980s in both Cases, but is improved by about $7 billion (to $-4 billion) in 1990 in the Slow Growth Reference Case relative to the Fast Growth Reference Case.

The two Reference Cases do not exhaust the potential for either strength or weakness in the Canadian economy in the 1980s. They do, however, represent a "reasonable" set of bounds of economic performance within which we feel the most likely performance of the Canadian economy, at least in terms of overall growth, is likely to be. In particular, low domestic energy prices are not necessarily the only way in which a "High Growth"

Case can be generated. Increased rents from higher oil prices received by governments and producers can be recycled through increased investment, tax reductions, and other stimulative policies to achieve a "high growth" scenario as well.

The potential for other factors to influence Canadian economic performance is examined in the Impact Cases in Sections F and G of this text. A tabular presentation of some major economic indicators for both of the Reference Cases is shown on the following pages. Appendix A contains extensive detail on both cases.

SLOW GROWTH REFERENCE CASE

MACROECONOMIC FRAMEWORK

	1980	1981	1982-85*	1986-90*
Percentage Growth in:				
Real GNP	0.2	1.7	3.6	3.6
GNP Deflator	10.5	9.4	7.3	6.2
GNP ($C)	10.7	11.3	11.2	10.0
Labour Force	2.5	1.8	1.9	1.8
Employment	2.0	1.2	2.0	1.9
RDP/Employed Person	-2.3	0.8	1.8	1.9
CPI	9.6	10.5	7.6	6.1
Average Wage Rate	8.6	10.4	9.1	7.8

* Average annual rate of growth

Levels:				
Unemployment Rate (%)	7.9	8.4	7.7	7.6
Current Account Balance (Billions of $C)	-4.2	-4.8	-9.0	3.4
Government Balance (Billions of $C)	-3.6	-2.9	-1.1	4.6
Wages and Salaries as a Percentage of National Income	70.5	70.2	69.9	69.9
Corporate Profits as a Percentage of National Income	16.5	17.3	17.8	17.4

* Average levels over the period

FAST GROWTH REFERENCE CASE
MACROECONOMIC FRAMEWORK

	1980	1981	1982-85*	1986-90*
Percentage Growth in:				
Real GNP	0.2	2.0	4.3	3.7
GNP Deflator	10.5	8.8	5.9	6.0
GNP ($C)	10.7	11.0	10.5	9.9
Labour Force	2.5	1.9	2.0	1.8
Employment	2.0	1.4	2.5	2.1
RDP/Employed Person	-2.3	0.9	2.1	1.8
CPI	9.6	9.9	6.3	5.9
Average Wage Rate	8.6	10.1	8.2	7.6

* Average annual rate of growth

LEVELS:

	1980	1981	1982-85*	1986-90*
Unemployment Rate (%)	7.9	8.3	7.0	5.6
Current Account Balance (Billions of $C)	-4.2	-4.8	-8.9	+0.3
Government Balance (Billions of $C)	-3.6	-4.2	-7.2	-4.4
Wages and Salaries as a Percentage of National Income	70.6	70.3	70.1	70.6
Corporate Profits as a Percentage of National Income	16.5	17.1	17.8	17.8

*Average levels over the period

SECTION C

C. Labour Supply Conditions in the Reference Cases

Before we analyse labour supply conditions it
is important to understand exactly what we mean by labour
supply. Two different concepts of labour supply are measured
in our economic accounting systems. The first, and broadest
measure is the source population. This includes, with a
few exceptions[1], all persons in Canada of 15 years of age
and older. This broad concept of labour supply is determined
solely by demographic factors.

The second, and narrower measure of labour supply
is the labour force. This includes only those people in
the source population who are either employed in the measured
economy (essentially legal occupations associated with money
incomes) or who are actively seeking such employment. This
is dependent not only upon the demographic factors delineating
the source population, but also upon behavioural patterns of
people in the source population and definitional criteria in
our measurement systems. The behavioural determinants of the
labour force are reflected in participation rates, and as these
patterns shift for both economic and social reasons, the size of
the labour force shifts. The definitions upon which we base
our measurements are critical to our perception of both the
size and the composition of the labour force.

------

[1] Exceptions are persons living on Indian reserves, inmates of
institutions, full-time members of the armed forces and residents
of the Yukon and Northwest Territories. This last exclusion,
although small in number, may have important implications over
the next two decades if major investment projects are undertaken
in these areas.

Demography

Population growth is generated through natural increases
in the indigenous source population by way of births and deaths,
and from external factors, immigration and emigration. None of
these factors are altered between our two Reference Cases, so
the basic demographic setting is the same for both scenarios.

The recent trend towards marriages later in life, coupled
with the increased participation of females in the labour force,
has led to a sharp decline in both the number of births and the
birth rate during the past two decades. The current general
fertility rate (the birth rate per 1,000 women aged 15-49),
which is below "replacement" birth rates, is approximately half
that realized during the baby boom of the 1950s.

The factors which led to this decline will likely continue
to play a prominent role during the 1980s. Therefore, we have
assumed that age specific fertility rates will remain at their
1979 levels throughout the forecast period.

Through the 1970s, a relatively high proportion of the
female population was moving into prime child-bearing age groups,
mitigating, to some extent the decline in the number of births
per female in these age groups (20 yrs-34 yrs). However, as we
enter the 1980s, the increases in this population group are
expected to moderate, reflecting the end of the Post-War baby
boom cohort's entrance into the prime child-bearing age. Thus we
should expect to see a decline in the total number of births even
if the age-specific fertility rates remain unchanged.

Although age-specific death rates are also assumed to remain constant during the 1980s, as was the case during the last decade, the changing age composition of the population will lead to an increase in the overall death rate by 1990.

BIRTHS AND DEATHS

	Births[1]	General Fertility Rate[2]	Deaths[1]	Death Rate[3]
1950	372	107.7	124	9.1
1955	443	116.5	129	8.2
1960	479	114.1	140	7.8
1965	419	90.3	149	7.6
1970	372	71.2	156	7.3
1975	359	61.2	167	7.4
1976	360	60.3	167	7.3
1977	361	59.4	167	7.2
1978	359	58.0	168	7.2
1979	358	57.4	171	7.2

[1] Thousands
[2] Birth rate per thousand women aged 15-49
[3] Deaths per thousand population

Immigrants currently comprise approximately 18% of Canada's total population. However, what distinguishes population growth as a result of immigration from that attributable to natural increases in the source population, is that the former can be affected by government policy. As past experience indicates, in times of high unemployment, immigration is relatively low while the converse is true when domestic labour markets are tight. Given the relatively high unemployment rates expected during most of the 1980s, we have assumed a level of net immigration (immigration less emigration) of 50,000 per annum during the decade.

One of the most significant developments with respect to immigration during the past two decades has been the changing origins and labour force characteristics of the immigrants.

As a result of improved employment and income opportunities in Western Europe, the proportion of immigrants entering Canada from this region has declined from 89% during the 1950s to 35% in 1978. Also, the percentage of immigrants entering the labour force has dropped from over 50% during the fifties and sixties to 40% in 1978, reflecting, in part, both the cultural origins of the immigrants and the proportion entering as dependents of relatives already here.

IMMIGRATION
(THOUSANDS/CALENDAR YEAR BASIS)

1950	74	1975	188
1955	110	1976	149
1960	104	1977	115
1965	147	1978	86
1970	148	1979	112
		1980-90 (est.)[1]	125

1/ Mid-year to mid-year basis, annual flow.

IMPUTED EMIGRATION
(THOUSANDS/CALENDAR YEAR BASIS)

1950	59	1975	64
1955	41	1976	68
1960	61	1977	77
1965	60	1978	78
1970	81	1979	78
		1980-90 (est.)[1]	75

1/ Mid-year to mid-year basis, annual flow.

NET IMMIGRATION (IMMIGRATION - EMIGRATION)
(THOUSANDS/CALENDAR YEAR BASIS)

1950	15	1975	124
1955	69	1976	81
1960	43	1977	38
1965	87	1978	8
1970	67	1979	34
		1980-90 est.)[1]	50

1/ Mid-year to mid-year basis, annual flow.

<u>Immigration by Country of Origin[1]</u>
<u>(% of Total)</u>

	1951-57	1958-62	1963-67	1968-73	1973	1974	1975	1976	1977	1978
Europe	39.1	77.9	73.8	49.9	39.0	40.6	38.8	33.3	35.5	34.8
U.S.A	5.5	11.7	9.9	15.2	13.7	12.1	10.7	11.6	11.2	11.5
Other North and Central America	0.7	1.6	2.8	8.4	11.2	11.6	10.4	10.4	11.6	10.9
South America	0.8	1.7	1.6	3.6	6.0	5.7	7.1	7.1	6.8	7.9
Asia	2.3	3.9	7.2	16.8	23.4	23.1	25.2	29.7	27.3	27.8
Africa	0.6	1.3	2.3	3.3	4.5	4.8	5.3	5.2	5.5	4.9
Australia	0.9	1.7	2.2	2.3	1.5	1.2	1.0	1.3	1.3	1.4
Oceania	0.1	0.1	0.2	0.5	0.6	0.8	1.4	0.9	0.8	0.8

[1]By country or last permanent residence.

Source: Employment and Immigration Canada, Immigration Statistics.

The implication of these assumptions is that the population of Canada will grow at an average annual rate of approximately 1% during the 1980s.

POPULATION IN CANADA
(MILLIONS, MID-YEAR)

1980	23.9	1986	25.3
1981	24.2	1987	25.6
1982	24.4	1988	25.8
1983	24.6	1989	26.0
1984	24.9	1990	26.3
1985	25.1		

For labour market analysis, the relevant population
to examine is not the total population, but rather the civilian
source population as described at the beginning of this Section.
Except for possible variations in international migration,
both the size and age/sex structure of the source population
is known with virtual certainty for the next 15 years. Although
the sex structure of source population does not vary significantly,
the age structure, reflecting the movement through age categories
of the baby-boom cohorts, shows considerable variation over time.
Through the period of the 1980s, this group will pass into the
prime labour force age category (25-54 yrs.) from the younger
category. Thus the prime age group will increase its share from
51.8% in 1980 to 55.9% by 1990, while the younger (15-24 yrs.)
group's share will decline from 24.9% to 19.7%. Details of source
population projections can be found in Appendix B.

Participation Rates

Once the size and the age/sex structure of the popu-
lation has been determined, the supply of labour that will be
available depends on the desires of that part of the population
able to work (the source population) to participate in the
labour force. Simply expressed, the labour force is equal to the
source population multiplied by the proportion of the source
population either employed or searching for employment (the
participation rate).

The decision of those in the source population as to
whether or not they will enter (or stay in) the labour force
depends upon a wide variety of factors, both economic and
sociological. In essence, they boil down to the question of
whether the expected net benefits of labour force participation
exceed the net benefits of the next best use of the individual's
time (the opportunity cost). For different individuals (or
groups of individuals) the expected benefits will differ widely.
For instance, a trained doctor in Alberta would have a high
probability of receiving a large income from labour force parti-
cipation. On the other hand, an unskilled labourer in northern
New Brunswick would have a much smaller chance of finding employ-
ment, and if he (or she) was successful the remuneration would
be considerably less than our Alberta doctor's. His expected
net benefits might be somewhat higher if he were eligible for
unemployment insurance, but it would remain well below the
expected net benefits of the doctor in Alberta.

In a similar vein, the next best alternative use of

time or opportunity cost will exhibit considerable variance
across different groups and individuals. The expected returns
from continuing education, for instance, rather than labour
force participation, are much higher for young persons, who will
be able to gain returns from that education over a longer period
of time, than for older persons. For some women, the returns
from bearing and raising a family may exceed the expected
returns of labour force participation, while for others, the
net benefit may be much less, and for men an impossibility (at
least as regards the bearing of children).

In T.I.M. we have disaggregated participation rates
by age and sex where we can identify and estimate different social
and economic goals and opportunities. A sample of the ways in
which we explain participation rates will illustrate both the
type and the variety of influences which have proved significant
in affecting participation rate behavior.

1. Females 15 yrs.-19 yrs.

a) The share of total employment opportunities which
are in the services sector (trade, finance, adminis-
tration, etc.). As females have easier access to
employment in these industries, the probability of
employment rises as the share of employment in these
sectors rises.

b) The real wage rate and the real unemployment benefit
rate. As these rise, the returns to entering the
labour force rise.

c) School enrolment. This is the principal alternative
for persons of this age group.

d) The share of the total source population represented
by this age/sex group. As this share rises, the
probability of obtaining employment for this group
falls because of increased competition for entry
level jobs open to females.

2. Males 65 yrs.-69 yrs.

    a) The unemployment rate. As the unemployment rate
        rises, the probability of obtaining employment
        falls. This phenomenon is often called "the
        discouraged worker effect".

    b) The number of people in this category relative
        to total employment in the economy. As for
        young women, this age/sex category may be
        limited in the types of jobs available to it.

    c) Real income per person. As this rises, the need
        for older males to maintain an income falls.

    d) The real value of old age security and Canada/
        Quebec Pension Plan benefits. This is an
        alternative source of income.

3. Females 25 yrs.-54 yrs.

    a) The share of total employment opportunities
        which are in the services sector (as for
        females 15-19 yrs.).

    b) The real wage rate and the real unemployment
        benefit rate. As these rise, the returns to
        entering the labour force rise.

    c) The unemployment rate over the previous four
        years. The most recent rate will discourage
        labour force participation if it is high,
        but if the rate has remained high for a number
        of years, some households may be encouraged
        to opt for "secondary" wage earners to join
        the labour force.

Other specifications might result from alternative
theoretical viewpoints. The ones shown above and the other speci-
fications within TIM are derived from extensive econometric experi-
mentation over a number of years.

There are, of course, other factors which influence
participation rate behavior. Many of these are difficult to
measure, such as attitudes towards roles or incomes, and thus
they elude formal analysis. Nonetheless, there is little doubt

that they do have real, and sometimes dominant influences on participation rate behavior.

This type of influence can clearly be observed in the rapid increase in female participation rates in Canada over the past three decades. In 1955 less than 25% of females aged 24-55 were in the measured labour force. By 1979, about 58% were in the labour force, with no sign of any slowdown in the trend to higher participation rates in evidence. Similar, although less dramatic participation rate increases have occurred for both older and younger age groups of females.

In both our Reference Cases, the trend to higher female participation rates continues through the decade of the 1980s, albeit at a slightly slower pace. By 1990, we anticipate that over 75% of females aged 25-54 will be in the labour force.

Male participation rates are much more stable than female rates, particularly for the prime age group (25-54). The table below compares male and female participation rate behavior in the past and in our Reference Cases.

PARTICIPATION RATES BY AGE AND SEX

	1955	1965	1975	1980	Fast Growth		Slow Growth	
					1985	1990	1985	1990
15-19 yrs.								
Male	.57	.45	.55	.58	.60	.63	.58	.60
Female	.43	.39	.47	.52	.56	.60	.55	.59
20-24 yrs.								
Male	.92	.97	.85	.86	.86	.87	.86	.86
Female	.48	.55	.67	.72	.76	.79	.75	.78
25-54 yrs.								
Male	.96	.96	.95	.95	.95	.95	.95	.95
Female	.24	.35	.50	.60	.67	.76	.66	.75
55-64 yrs.								
Male	.85	.86	.79	.75	.73	.70	.74	.71
Female	.16	.29	.31	.35	.37	.39	.38	.40
TOTAL	.55	.57	.61	.64	.66	.69	.66	.69

As the table indicates, the difference in the aggregate participation rate varies by less than 1% between the two cases (68.8% in the Slow Growth Reference vs 69.1% in the Fast Growth Reference). Some elements of the detail, particularly in the younger age categories, do show some of the effects of the relative unemployment rates.

Although in some age groups the female participation rates are approaching equivalent male rates, we suspect that they are unlikely to reach the levels of the male rates in the long run. Principally this is because an alternate opportunity, that of producing and raising a family, will always be more open to females than to males. The increased prevalence of day-care has and will enable easier access to the labour force for a large number of females. But the bearing of children will ensure that at least some part of the female source population is unavailable for the labour force for at least some period of time. Further, we suspect that a portion of the female source population will continue to chooseto raise their family as an alternative to labour force participation. This suggests that in the 1990s at the latest, the rate of increase in female participation rates is likely to slow down and finally stabilize. At the other extreme it is possible that the trend to more female labour force partici- pation will be reversed, producing declining participation rates. We view this as unlikely in the foreseable future.

Both our Reference Cases have participation rate
outlooks that are quite close to the view expressed in a
recent Department of Finance study [1]. A comparison between
the Fast Growth Reference Case and the Department of Finance
outlook is shown in the table below.

PARTICIPATION RATES

A COMPARISON

	1980	1985	1990
Young Persons (15-19)			
- Base Case	.548	.582	.611
- Finance		.580	.593
Adult Males (20+)			
- Base Case	.816	.813	.809
- Finance		.815	.808
Adult Females (20+)			
- Base Case	.499	.543	.596
- Finance		.556	.611
Total			
- Base Case	.641	.665	.691
- Finance		.672	.697

---

[1] Department of Finance; Recent Changes in Patterns of
Productivity Growth in Canada, Ottawa, April 1980.

Implications for Labour Force Growth

The effects of demographic and participation rate behavior on the measured labour force can be examined in the table below. A marked slowdown in the rate of growth of the labour force is anticipated in the 1980s in both our Reference Cases. The first half of the 1970s was characterized by extremely rapid labour force growth, averaging over 3.5% per year. In the second half of the decade, although the domestic source population continued to grow at about 1.7% per year, the growth of the total labour force slowed to an average of 2.8% per year. A major contributor to the slowdown was the decline in net immigration in the late 1970s, but a slowdown in the rate of increase of participation rates was also a factor.

For the 1980s, our assumption of 50,000 net immigrants per year (of whom about 40% are assumed to enter the labour force) suggests that the contribution to labour force growth from foreign migration will be similar to the average over the past five years. This is, of course, subject to policy decisions. Participation rates are expected to continue to increase, but at a rate somewhat slower than experienced over the past decade. The increase is concentrated in the females 25-54 yrs. age/sex category, with slower growth for younger and older females, and male participation rates virtually stable. The pattern over the decade is influenced by the unemployment rate, discouraging some participation in the first

half of the 1980s, and encouraging more participation in the second half, particularly in the Fast Growth Reference Case. There is a logical limit to increases in participation rates as no age/sex group can have more than 100% participation. Thus as suggested above, we expect that the trend growth in participation rates will have to slow and finally stop at some time in the future. International comparisons suggest that towards the end of the 1980s or early in the 1990s, the female participation rates are likely to approach new, relatively stable levels.[1]

The most significant change in the components of labour force growth in the 1980s will come from the growth in the domestic source population. This slowdown can be expected with some certainty as it depends only upon the age composition of the Canadian population in 1979. By 1990, no persons born after 1979 will be of labour force age, and the mortality rate of people of labour force age has been and is expected to remain fairly stable. Here, more than anywhere, we can observe the effects of the aging of the baby-boom cohorts. By 1980, most of the baby-boom population has entered the labour force, and the slowdown in source population growth which results can be seen to have a large impact on our expectations for labour force growth during the 1980s.

---

[1] In some Communist countries (i.e., Poland, U.S.S.R.) the participation rate is now (1977 I.L.O. Yearbook of Labour Statistics) in the 68-72% range. In Sweden and Denmark it is (1977) about 65% with a participation rate for females aged 30-44 years of about 75%.

Fast Growth Reference Case

Labour Force

| | Average Annual Rates of Growth | | | |
	1970-75	1975-80	1980-85	1985-90
Labour Force Growth				
From Net Immigration	0.65%	0.17%	0.17%	0.16%
From Source Population (Domestic)	1.76%	1.70%	1.05%	0.82%
From Participation Rates (Fast Growth)	1.13%	0.95%	0.74%	0.77%
(Slow Growth)			0.65%	0.77%
Total (Fast Growth)	3.51%	2.84%	1.97%	1.76%
(Slow Growth)			1.88%	1.76%

The slowdown in the rate of growth in the labour force will also involve a shift in the age and sex composition of the labour force. Because virtually all the increase in participation rates will come from females, and as the rate of growth of the labour force generated from source population and net immigration is reduced, the share of females in the labour force will continue to grow at a rather rapid rate. In addition, as the baby-boom cohorts age, the share of the labour force in the younger age categories will start to decline after almost twenty years of increase.

In 1960 only 27% of the labour force was female. By 1980, resulting from the rapidly rising female participation rates, the female share has risen to almost 40%. Over the next decade we believe that this will rise to over 44%. For young people, the peak in the share of the labour force represented by 15-24 yr. olds was 27.1% in 1975. This had risen from 21.5% in 1960, but by the late 1970s, had already begun to decline. By the end of the decade we expect that the share of young persons (15-24 yrs.) in the labour force will fall to 20.6%, well below its 1960 low of 21.5%. This reflects the aging of the baby-boom cohorts together with the decline in the birth rate in the 1960s, and implies that a smaller and smaller share of labour force participants will be made up of new entrants. As this is the group which is probably most mobile, with respect to both location and occupation, this may have important consequences for the ability of the labour supply to adjust to new demands.

The decline in the share of the labour force repre-
sented by older persons (55 yrs. +) which has occurred over
the past twenty years is expected to continue into the 1990s,
principally as a result of declining participation rates for
older males. This reflects earlier retirement behavior result-
ing from improved pension benefits combined with public pension
and old age security plans.

LABOUR FORCE COMPOSITION (% SHARE)
FAST GROWTH REFERENCE CASE

	1960	1965	1970	1975	1980	1985	1990
Males 25-54	48.8	45.3	42.0	39.6	38.5	38.8	38.5
Females 25-54	15.3	16.9	18.6	21.3	24.2	26.5	30.5
Males 15-24	12.6	13.1	14.2	14.9	14.1	13.3	10.8
Females 15-24	8-9	9.8	11.2	12.2	11.9	10.8	9.8
Males 55+	11.4	11.1	10.2	8.6	7.6	7.1	6.5
Females 55+	3.0	3.5	3.7	3.5	3.7	3.7	3.8
Male	72.8	69.5	66.4	63.1	60.2	59.2	55.8
Female	27.2	30.5	33.6	36.9	39.8	40.8	44.2
Males & Females 25-54	64.1	62.2	60.6	60.9	62.7	65.3	69.0

SECTION D

-32-

D. Labour Demand Conditions

Employment, Output and Productivity

Demand for labour services is derived from the demand for the production of goods and services. The various categories of final demand in the economy (consumer expenditure, investment, government expenditure, and exports less imports) are met through production processes which combine labour, capital, natural resources, and purchased inputs (intermediate goods) in such a way as to (ideally) minimize the cost of the output. Because the purchased inputs of one industry are typically the outputs of another industry, the combined output for the economy is essentially the result of the combination of labour, capital and natural resources. The requirements from each industry, to meet any given amount of demand are the contribution of each industry (the value-added) to total output of the economy. In order to estimate the requirements for labour in terms of levels of employment, we eliminate the effects of rising prices by deflating value-added to derive a constant dollar measure of output by industry - real domestic product (RDP).

Our macroeconomic environment provides estimates of the demand generated by the economy, and, through the use of an input-output framework (which describes how final demand by categories is produced in the Canadian economy - i.e., technology) the requirements for output by each industry can be determined. The only question which remains is how much

labour (employment) will be required to meet these levels of output by industry.

The answer depends upon how much output can be produced by each person employed - that is the productivity of labour. It is clear that the total output, for each industry or for the economy as a whole, must equal the number of people employed multiplied by the (average) amount of output per person employed. The table below illustrates that the growth of output in the Reference Case is directly related to the growth in employment and the growth in labour productivity.

Average Annual Rates of Growth

Historical Period

	1960-65	1965-70	1970-75	1975-80
Employment	2.84%	2.65%	3.25%	2.65%
Productivity	2.81%	2.14%	1.60%	0.36%
Output	5.72%	4.85%	4.89%	3.02%

	Fast Growth Reference Case		Slow Growth Reference Case	
	1980-85	1985-90	1980-85	1985-90
Employment	2.25%	2.13%	1.87%	1.92%
Productivity	1.87%	1.77%	1.63%	1.86%
Output	4.09%	3.94%	3.53%	3.82%

At this time, the poor productivity performance through the 1970s has not been satisfactorily explained. It comes after two decades when average productivity growth was 2.0%-2.5% per annum. Two views on the experience of the 1970s now predominate arguments regarding productivity. The first

suggests that there has been a fundamental change in the economies of not just Canada, but all western industrialized nations. This change has been ascribed to the drastic energy price increases, the breakdown of fixed international exchange rates, the maturing of industrial processes or a variety of other changes in our economic environment. The implication of this view of a fundamental change suggests that the prospects for productivity growth in the 1980s are no better than the performance of the 1970s. With substantially slower growth in productivity, in order to meet even the Slow Growth Reference Case overall performance, employment growth would have to be substantially more rapid. By the mid-1980s, aggregate labour force constraints would likely begin to act as a brake on real growth in the Canadian economy.

The second view of the 1970s productivity slowdown suggests that the poor performance was the result not of a fundamental change in the composition of the economy, but rather a result of temporary, predominantly cyclical forces. Weak growth in Canada and in the economies of Canada's trading partners, in this view, associated with a consequent weakness in productive capital investment is seen as the principal villain. Special circumstances, such as the change in the relative price of energy, or the introduction of new regulations are believed to result, perhaps, in one-time adjustments to the level of productivity, but not as factors which will affect the trend growth rate in productivity. The implication of this view is that there may be a great deal of "bottled-up" productivity growth (realized through labour hoarding for instance) so that

when the economy enters a growth phase, probably by 1982, there is the potential of a sharp surge in productivity growth. Further, optimists with regard to the productivity question argue that the trend growth in productivity over the course of the 1980s will be boosted by the introduction of recent developments in the computer/communications industry into offices, stores, factories and other sectors of the economy. The implication of this view is that, even in the Fast Growth Reference Case, most of the real growth would be met by productivity increases rather than increased employment, and labour markets would remain very slack through the end of the decade. This would imply that the potential for economic expansion could be considerably greater than in either of our Reference Cases.

The view put forward in both our Reference Cases lies somewhere between the two positions explained above. Average productivity growth stays in a fairly narrow range of 1.6% per year to 1.9% per year, below the rates experienced in the 1950s and 1960s, but above those experienced through most of the 1970s. In our opinion, some continuing adjustments will have to be made through the decade to the new relative prices for energy. This will require the allocation of some investment towards energy-efficient (rather than labour-efficient) capital. At the same time, recent research by the Department of Finance and by the Economic Council of Canada tend to support Informetrica Limited's view that a significant part of the 1970s' slowdown

in productivity growth can be attributed to cyclical problems. Thus, we believe that the most likely prospect for the 1980s is a more robust productivity performance than was the case in the 1970s.

Our Reference Cases reflect these beliefs. In some instances, the results of the model have been adjusted to incorporate the expert views of industry analysts regarding the balance struck between the two extreme views on the outlook for productivity growth.[1]

The tables below indicate the shares of employment and output by the 12 major sectors of the Canadian economy as shares of the respective totals over the historical period and for our two Reference Cases. One aspect of the industrial distribution of employment which this table demonstrates is that, although there are indeed shifts in the structure, these shifts take place only very gradually over time, and the relative shares remain quite stable. We can, nonetheless, distinguish some trends in these indicators of the structure of the Canadian economy.

In the distribution of employment, we can observe a distinct shift from the goods-producing sector to the services-producing sector. From 1960 to 1980, the share of employment in the goods-producing sector (including utilities) declined from 45.5% to 33.9%. The principal areas of expansion were in finance, services (both public and private) and public

---

[1] The Appendixes show the Model results while the text (and tables within the text) are based on the adjusted results.

Informetrica • Ottawa, Canada • Effective Economic Research
LIMITED

Historical Period

Shares of Output and Employment

by Industry

	1950		1960		1970	
	RDP	EMP	RDP	EMP	RDP	EMP
Agriculture and Fishing	6.4	21.0	4.8	11.7	3.4	6.7
Forestry	1.2	1.6	1.0	1.6	0.9	0.9
Mining	2.3	1.5	3.7	1.5	4.0	1.6
Manufacturing	21.9	24.5	21.1	23.2	22.8	22.3
Construction	6.9	6.1	7.6	6.4	6.7	5.9
Utilities	1.4	0.9	2.1	1.2	2.6	1.1
Transportation	8.0	8.5	8.0	8.4	9.0	7.7
Trade	11.8	13.8	11.6	17.0	11.4	16.8
Finance	8.3	2.9	7.5	3.9	7.6	4.8
Services	19.1	12.9	17.9	18.5	19.7	25.8
Administration	9.0	5.7	9.5	6.0	7.5	6.4
Housing (Imputed)	4.3	0.0	5.2	0.0	4.3	0.0

Fast Growth Reference Case

Shares of Output and Employment
by Industry

	1980		1985		1990	
	RDP	EMP	RDP	EMP	RDP	EMP
Agriculture and Fishing	2.9%	4.9%	2.6%	4.7%	2.3%	4.6%
Forestry	0.7%	0.7%	0.6%	0.6%	0.7%	0.6%
Mining	3.0%	1.5%	2.9%	1.5%	3.1%	1.7%
Manufacturing	22.1%	19.7%	23.8%	19.7%	24.8%	18.9%
Construction	6.1%	6.0%	6.0%	6.1%	5.9%	6.2%
Utilities	3.3%	1.1%	3.6%	1.0%	3.8%	1.0%
Transportation	10.1%	7.6%	10.6%	7.8%	11.0%	8.1%
Trade	12.0%	17.3%	12.1%	17.3%	12.1%	17.6%
Finance	8.8%	5.6%	8.6%	5.5%	8.6%	5.5%
Services	19.7%	28.8%	19.0%	28.9%	18.6%	29.0%
Administration	6.8%	6.7%	6.2%	6.7%	5.6%	6.7%
Housing (Imputed)	4.5%	-	4.1%	-	3.6%	-

Slow Growth Reference Case
Shares of Output and Employment
by Industry

	1980		1985		1990	
	RDP	EMP	RDP	EMP	RDP	EMP
Agriculture and Fishing	2.4%	4.9%	2.6%	4.8%	2.3%	4.6%
Forestry	0.7%	0.7%	0.7%	0.6%	0.7%	0.6%
Mining	3.0%	1.5%	3.0%	1.5%	3.1%	1.7%
Manufacturing	22.1%	19.7%	23.5%	19.6%	24.7%	19.0%
Construction	6.1%	6.0%	6.1%	6.2%	6.0%	6.3%
Utilities	3.3%	1.1%	3.6%	1.1%	3.8%	1.1%
Transportation	10.1%	7.6%	10.5%	7.9%	10.9%	8.2%
Trade	12.0%	17.3%	12.0%	17.3%	12.1%	17.4%
Finance	8.8%	5.6%	8.6%	5.5%	8.6%	5.5%
Services	19.7%	28.8%	19.0%	28.9%	18.4%	28.9%
Administration	6.8%	6.7%	6.2%	6.7%	5.7%	6.8%
Housing (Imputed)	4.5%	-	4.2%	-	3.7%	-

administration. The fall in the goods-producing sector's share of <u>output</u> over this same period was far less pronounced (40.4% to 38.1%). This reflects the fact that <u>measured</u> productivity growth is typically far stronger in the goods-producing sector than in the services-producing sector. Our view is that this reflects principally the difficulties in measuring output in the services sectors (so that in many cases, employment becomes a proxy for the measure of output).

For the 1980s, we expect a continuation of the trend of a shift in the share of total employment into the services sector so that by 1990, only about 33.0% (in the Fast Growth Case) to 33.3% (in the Slow Growth Case) of total employment will be in the goods-producing sector. Although the direction of the trend is likely to continue, the rate of change is expected to slow down sharply. This reflects two fundamental factors which can be observed in both of our Reference Cases. First the areas of strongest growth we expect are in exports and investment, which put requirements on the goods sector more heavily than on the services sector. In addition, we expect a sharp slowdown in the rates of growth of both the publicly-provided services sector (health and education) and the public administration sector, reflecting both demographic trends and continuing expenditure restraint at all levels of government.

Industry Analysis

Agriculture employment declined absolutely almost every year from 1950 through 1973. This reflected both the application of new technology to the sector as well as the expansion of employment (and higher income) opportunities in the urban centres. Since 1973, employment in agriculture has remained stable at about 470 thousand (compared to over a million in 1950). Three elements in employment prospects suggest that the stability in employment in this sector since 1973 is likely to continue through the 1980s. First, it is likely that increased mechanization of farm production will slow down sharply, reflecting the increase in the relative cost of mechanization attributable to energy price increases. Second, the rate of expansion of urban employment opportunities is likely to be less rapid than it has been over the past few decades, and at least through the mid-1980s, unemployment levels will remain high. Third, the likelihood of a period of relatively high food prices will reduce the income differentials between agricultural employment and other employment opportunities. Although we anticipate some rise in the level of employment in the agricultural sector, its share of total employment will continue to decline. For fishing, the employment opportunities presented by expanded Canadian authority over coastal fishing rights will likely be offset by improved efficiency in the fishing industry.

The forestry sector, whose share of employment has declined from 1.6% to 0.7% from 1960 to 1980 is expected to experience little growth in employment over the 1980s as housing markets remain relatively weak. Mining, whose share of employment has remained relatively stable over the long term, should maintain its share as activity in energy extraction proceeds at a rapid pace. Some productivity improvements should be anticipated after the sharp declines in productivity experienced during the 1970s, as investment put into place over the past few years begins to bear fruit in terms of output.

Although manufacturing output is expected to rise as a share of total output, reflecting the structure of growth in final demand, it is in this sector that the greatest potential for measured productivity gains will continue to exist. Consequently the trend of a lower share of employment, in spite of the rising share of output which has characterized the past two decades, is likely to continue. From a level of 2,085,000 in 1980 (and 1,402,000 in 1960) we expect manufacturing employment to rise to 2.4-2.5 million by 1990. The areas of greatest growth will be in those manufacturing industries (steel, machinery, smelting, metal fabricating etc.) which supply the investment sector, both in Canada and in the U.S.

The construction industry presents some particular analytical difficulties. First, a significant number of people whom we would normally think of as employed in construction, are measured by our statistical system as being employed in other industries. This arises when industries undertake construction activity on their "own account" (i.e., utilities, real estate developers, etc.). The employment is classified by the principal occupation of the employing establishment. Hence, our measure of construction industry employment will understate the employment actually generated by the Canadian economy's construction activity, and will not capture changes which are generated from own-account construction activity. A second problem is that, even within our narrow definition of construction

activity, our measure of construction employment, particularly in recent years, is suspect. This is because the signals we get from two principal employment estimates (the Labour Force Survey upon which we base our employment analysis and the Establishment Survey upon which our income and output estimates are based) appear to be inconsistent. Although these difficulties exists to some degree in all industries, they are particularly acute in construction.

The industry's measured share of total employment has fluctuated between 6% and 7% since 1950, with construction output generally accounting for a somewhat higher share, except in recent years. Output per person grew at an average rate

of over 2.5% from 1950 through 1970. Since 1973, however, there has been virtually no improvement in measured productivity in the construction industry. Thus employement growth has matched or exceeded growth in output. It is difficult to determine the factors underlying this change, or to know whether it results purely from the measurement problems noted above. This casts great uncertainty on the outlook for construction employment through the 1980s. Our References Cases have assumed that we realize some renewed productivity growth in construction, but at an average rate of less than 1.25% over the decade of the 1980s. Different assumptions here, of course, could provide substantially different estimates of demand for construction employment. In both our Reference Cases, this assumption leads to a small rise in the share of employment in the construction industry through the 1990s, while the share of output remains stable. From 1980 to 1990, there is an overall increase of 168 thousand in construction employment in the Slow Growth Reference Case, and 182 thousand in the Fast Growth Case (from a level of 632 thousand in 1980).

The utilities sector, dominated by electric power generation, typically has substantial productivity gains as output increases. Its share of employment has averaged just over 1% of the Canadian total historically while its share of output has risen from a little over 1% in the 1950s to over 3.3% in 1980. This reflects the capital intensity of the production processes within the utilities sector, as well as the increased automation of electricity generating facilities. We expect these trends to continue through the 1980s.

Transportation and communications is also a sector
which is relatively capital intensive. It is facing conflicting
influences in the 1980s. Higher energy prices will make
some forms of transportation (i.e., road) less attractive
but others (rail) more attractive. The expansion of the
economy in more remote areas and an expected boom in the
communications industry will ensure considerable growth in
the shares of both ouput and employment for this sector under
either of our Reference Cases. The growth in the share of
employment (from 7.6% in 1980 to over 8% in 1990) reverses
a gradual decline in the share over the past three decades
(from just over 9% in 1953).

Much of the growth in the trade sector will be
realized in the wholesale trade component, reflecting the
relatively rapid expansion of investment and export demand
compared to consumer expenditures. In the Slow Growth
Reference Case, because the consumer sector is particularly hard
hit, there is virtually no increase in the share of employment in
the trade sector, after steady increases in the period from
the mid-1960s to the late 1970s. This sector, which is a
major source of employment in the Canadian economy (17.3%
in 1980, second only to services and manufacturing) is
particularly sensitive to changes in the levels of real
income and consumer expenditure.

For the finance, insurance, and real estate sector,
the very rapid growth in employment which characterized the past
three decades is expected to slow to about the average rate of
growth for the economy as a whole. Much of the growth of this

sector in more recent years has been associated with demographic influences; that is the entry of baby-boom cohorts into age groups where first time home-buying and insurance purchases typically occur. This will not be the case in the 1980s. Within the sector, finance will be the strongest subcomponent, as the demands of the investment sector remain strong.

The services sector shows similar divergences among its components, and for similar reasons. Publicly funded services, (health and education), which were areas of exceptionally strong growth in employment through the 1960s and 1970s, will expand their employment requirements at a much slower pace in the 1980s, reflecting both the population trends and our expectation of continuing restraint on government expenditures. Business services and services to consumers, on the other hand, will continue to be a major growth area. The investment sector will place strong demands on this sector, particularly in areas such as engineering services.[1] Consumer expenditure on services (i.e., hotels and restaurants) should grow more rapidly than aggregate consumer expenditure, reflecting larger real incomes per household and requirements for purchased services that are now provided in the home as the trend to more two-income families continues.

The public administration sector will experience the same constraints as the publicly provided services, so that its share of employment is not expected to increase over the decade.

---

[1]For example, about 6% of expenditure in gas and oil production investment and 8% of electric utilities investment is expenditure on engineering and other business services.

SECTION E

E. Balancing Labour Supply and Demand

In Sections C and D we have examined the supply
conditions and demand conditions implied by our Reference
Outlooks for the Canadian economy independently of each other.
In this Section we will analyse the implications of the
balance between the anticipated demand and supply of labour
at the aggregate level, examine some potential imbalances
within the Canadian labour markets of the 1980s, and discuss
the mechanisms by which these imbalances may be corrected.

The following table shows total demand (employment)
and total supply (labour force) over the past three decades
and in our two Reference Cases, as well as the implied
unemployment rate. It seems clear in both of our Reference
Cases that it is unlikely that there will be any constraint
on economic growth from insufficient aggregate labour supply
through 1985. Even in the Fast Growth Reference Case the
unemployment rate remains above 6.5% through the first half
of the decade. In the Slow Growth Reference Case the
unemployment rate remains high throughout the decade, so
that by 1990, it is still above 7% of the labour force.
In this case, then, the central problem at the aggregate
level would appear to be an excess supply of labour. In the
Fast Growth Reference Case, the unemployment rate declines
to 5% by 1990. This compares with an average unemployment
rate of 3.9% in the 1950s, 4.8% in the 1960s, 5.8% from 1970-74
and 7.6% from 1975-79. It should be noted that, associated

AGGREGATE LABOUR MARKET BALANCE

	1950	1955	1960	1965	1970	1975	1979	1980
Labour Force (000's)	5,214	5,666	6,475	7,213	8,395	9,974	11,207	11,476
Employment (000's)	5,039	5,431	6,040	6,948	7,919	9,284	10,369	10,573
Unemployment Rate (%)	3.4	4.1	6.5	3.7	5.7	6.9	7.5	7.9

Slow Growth Reference Case

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Labour Force (millions)	11.7	11.9	12.2	12.4	12.6	12.8	13.0	13.3	13.5	13.7
Employment	10.7	11.0	11.2	11.4	11.6	11.8	12.0	12.2	12.5	12.8
Unemployment Rate (%)	8.4	7.8	7.5	7.7	7.9	7.9	7.8	7.8	7.6	7.2

Fast Growth Reference Case

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Labour Force (millions)	11.7	11.9	12.2	12.4	12.7	12.9	13.1	13.3	13.6	13.8
Employment	10.7	11.0	11.3	11.6	11.8	12.1	12.3	12.6	12.8	13.1
Unemployment Rate (%)	8.3	7.6	7.0	6.8	6.6	6.2	5.9	5.7	5.4	4.9

with the lower unemployment rate is a slightly larger labour force. Looking at long-term historical averages, this suggests that by 1990 in the Fast Growth Reference Case, a more reasonable balance between labour supply and demand is achieved.[1]

Another way to look at labour markets is through the ratio of employment to total population (rather than employment to labour force). This gives an indication of the dependency rate:- that is, the number of people not in measured employment needed to be supported per employed person. In both our Reference Cases, as shown in the table below, this ratio has been rising steadily since 1960 and is likely to continue to rise through the 1980s.

Population and Employment

	1950	1960	1970	1980	(Fast) 1990	(Slow) 1990
Employment/Population	36.7%	33.8%	37.2%	44.3%	50.4%	48.9%
Dependents/Employment	2.7	3.0	2.7	2.3	1.98	2.04

Although we do not perceive any aggregate constraints on labour supply in either of our Reference Cases through 1990, this does not preclude the possibility of shortages of certain types of labour in certain areas of the country. The more local the market or the more specialized and non-transferable the skill set or other relevant characteristic, the more likely that specific shortages will occur, even in areas where

---

[1]This may or may not be viewed in 1990 as good (or bad) performance in labour markets. The composition of unemployment as well as its absolute level will remain an important factor in determining aggregate performance.

---

there may be an excess aggregate labour supply. Whereas
aggregate labour market imbalances can typically be addressed
through macroeconomic fiscal and monetary policy tools, local,
skill-specific, or type-specific labour market imbalances may
require targeted labour market policies to speed up labour
market adjustments or overcome institutional rigidities which
lead to such imbalances.

We have identified three principal concerns for
potential labour market imbalances in the 1980s, one generated
by the particular evolution of labour supply which we anticipate
and the other two resulting from the labour demand patterns
implicit in both our Reference Cases. The first is the
requirement for absorption of the continuing changes anticipated
in the sex-structure of the labour force. The second is the
requirement for labour mobility arising from the regional
and sub-regional dispersion of employment opportunities
likely to occur in the 1980s. And the third is the potential
for specific skill shortages which may arise as a result of
the changing mix of final demand, the lumpiness of major
investment projects, or the introduction of new technologies.

Male and Female Labour Force and Employment Opportunities

Our assumptions with regard to labour supply in Section C, and in particular our expectations regarding the continuing increase in female participation rates, suggest that the sex composition of the labour force will continue to shift rather rapidly over the course of the coming decade (see table on page 31). This, in turn, will mean that the sex composition of employment within industries must also change if significant labour market imbalances are to be avoided. In fact, the sex composition of employment within industries has changed appreciably in recent years (see Table 1) and it seems reasonable to expect that these trends will continue.

There are two ways in which employment shares within an industry can change. First, the type of job available, or occupational mix, within an industry can change. That is, there can be a shift (say) from heavy machinery operators to computer programmers as more automation is introduced into a factory. In part, this is a response of the industry to changing availability and price of labour. Secondly, the relatively abundant supply of labour (which is likely to be female in the 1980's) can follow careers in what are thought of as "non-traditional" occupations. We expect that both of these processes will be required, and are likely to be at least partly effective in changing the share of employment by industry to accommodate the relatively rapid expansion of the female labour force.

Table 1

Historical Composition of Male/Female Employment by Industry
(percentage of total industry employment)

Industry	1975 M	1975 F	1976 M	1976 F	1977 M	1977 F	1978 M	1978 F	1979 M	1979 F	Percentage of Total Employment-1979
Fishing*	95.2	4.8	95.0	5.0	95.0	5.0	95.6	4.4	94.1	5.9	0.28
Forestry*	95.0	5.0	94.4	5.4	95.6	4.4	93.5	6.5	93.4	6.6	0.74
Construction	93.5	6.5	93.3	6.7	92.7	7.3	92.4	7.6	92.3	7.7	6.17
Mining	91.4	8.6	92.5	7.5	90.8	9.2	90.1	9.9	89.7	10.3	1.62
Utilities	87.8	12.2	87.5	12.5	85.2	14.8	86.5	13.5	82.8	17.2	1.13
Transportation	80.7	19.3	79.6	20.4	80.1	19.9	80.3	19.7	78.6	21.4	7.51
Agriculture	77.6	22.4	75.7	24.3	75.0	25.0	74.8	25.2	74.4	25.6	4.66
Manufacturing	75.4	24.6	74.4	25.6	75.0	25.0	74.4	25.6	72.6	27.4	19.98
Public Admin.	68.3	31.7	67.8	32.5	67.5	32.5	66.3	33.7	72.6	27.4	6.81
Trade	60.6	39.4	60.1	39.9	59.9	40.1	59.7	40.3	64.7	35.3	17.39
Finance	42.8	57.2	42.5	57.5	42.7	57.3	41.2	58.8	57.3	42.7	5.33
Services	41.2	58.8	40.9	59.1	40.5	59.5	39.2	60.8	39.8	60.2	28.37

Source: Statistics Canada, Labour Force Survey
* Due to small sample size the number of females lies within the
error of measurement.

Informetrica • Ottawa, Canada • Effective Economic Research
LIMITED

As can be seen on Table 1, the share of employment accounted for by females is low in most goods-producing industries (the highest share is 27.4% in manufacturing). It is in the service industries that high shares of female employment are evident, and, in finance, insurance and real estate and community and business services, females account for about 60% of employment. But, as discussed in Section D above, we anticipate a rather marked slowdown in the shift of overall employment to the services sector over the course of the 1980's. Thus, while the female labour force is expected to grow at an average annual rate of 2.9% through the 1980's, expansion of employment in the service-producing sectors is expected to grow by only 2.5% per year. Conversely, while the male labour force is expected to grow at a 1.1% annual rate, employment in the goods-producing sector should grow at about 1.6% per year. In order to illustrate the need for adjustment within industries, we have estimated what would happen if the sex distribution of employment by industry were to remain constant at the 1979 shares through 1990. As illustrated on Table 2, and on the following graph, there would not be enough male labour to support the economic growth in the Fast Growth Reference Case by 1988, while the unemployment rate for females would continue to increase throughout the decade. This is clearly an untenable situation, and certainly before the spread of unemployment rates widened significantly, market forces (whether they be relative wage rates, hiring and search costs, or whatever) would encourage the adjustment process within both the industries and labour supply

Table 2

Unemployment Rates;
1979 Employment Opportunities Distribution

| | Fast Growth Reference Case | | | Slow Growth Reference Case | |
	Female	Male		Female	Male
1981	9.4	7.5		9.48	7.65
1982	9.6	6.1		9.86	6.48
1983	9.8	4.9		10.14	5.67
1984	10.4	4.2		10.99	5.38
1985	11.1	3.3		11.99	5.04
1986	11.6	2.3		12.74	4.39
1987	12.1	1.3		13.51	3.65
1988	12.8	0.2		14.40	2.78
1989	13.4	-0.8		15.12	1.81
1990	13.8	-2.2		15.66	0.16

MALE/FEMALE LABOUR FORCE AND EMPLOYMENT

GRAPH 1

Under assumption of fixed sex distribution of employment by industry

MALE LABOUR FORCE

MALE EMPLOYMENT

FEMALE LABOUR FORCE

FEMALE EMPLOYMENT

8000
7000
6000
5000
4000

1981   1984   1987   1990

MALE LABOUR FORCE
FEMALE LABOUR FORCE
MALES-EMPLOYMENT
FEMALES-EMPLOYMENT

that would alter occupational availability and requirements to accommodate the labour market conditions.

The speed at which the labour markets can adjust to these imbalances depends critically upon the underlying reasons for occupational segmentation - the extent to which it stems from systemic discrimination, women's employment preferences, the nature of work in different industries, location, the different patterns of labour market participation of men and women, the attitudes of men in male-dominated industries towards female co-workers, or other causes.

If the labour markets are slow the adjust, we should expect increasing wage differentials to emerge between the goods-producing and service-producing sectors, as male-dominated industries attempt to bid workers away from other sectors, leaving more vacancies in the service-producing sectors to be filled, where feasible, by women.

Table 5

Labour Force by Age and Sex
(Thousands)

L.M.: Fast Growth Reference Case

		1980	1985	1990
Female	15-24	1370	1368	1357
	25-54	2776	3447	4205
	55+	423	473	529
Total		4569	5288	6091
Male	15-24	1580	1564	1497
	25-54	4416	4909	5317
	55+	876	891	900
Total		6872	7364	7204

L.M.: Slow Growth Reference Case

		1980	1985	1990
Female	15-24	1370	1355	1339
	25-54	2776	3401	4156
	55+	423	480	536
Total		4569	5236	6031
Male	15-24	1616	1536	1459
	25-54	4416	4909	5317
	55+	876	913	936
Total		6908	7358	7712

Regional and Sub-Regional Imbalances

Even if the Canadian labour force is expanding at a rate adequate to meet the growth in demand for labour in an aggregate sense, specific regions or sub-regions within the country may require more (or less) rapid expansion of their labour forces than can be supplied by the source population of the particular area. This requires a flow of labour supply to regions of relatively rapidly expanding employment opportunities from those of relatively slowly expanding employment opportunities. Canada, because of the vast distances between regions, faces special problems when growth patterns are substantially different at opposite ends of the country.

Perhaps the most significant structural change in the Canadian economy of which we can be reasonably sure for the decade of the 1980s will be the change in the relative price of energy. Consistent with this change will almost certainly be a more rapid economic expansion in those areas of the country with significant resources in the energy field (especially but not exclusively in the oil and gas sector) and less rapid expansion in "energy poor" areas. Operationally this will be reflected in both major energy investment projects and the expansion of other sectors of the economies (reflecting energy related income growth) in Alberta, Saskatchewan, British Columbia, the Territories, and perhaps

Newfoundland. Furthermore much of this activity will be remote from established population centers. Thus, the need for regional and sub-regional labour force mobility is likely to be substantial during the decade of the 1980s.

An analysis of the requirements for regional reloca- tion in the 1980s is provided in a separate document, based on the same macroeconomic framework established in this study. Briefly, it indicates requirements for substantial outflows from Eastern and Central Canada and inflows to the Western Provinces (except Manitoba). The magnitude of the require- ments poses some difficult policy questions, both for the receiving provinces, where considerable strains are likely to be felt on basic social infrastructure, and the losing provinces, whose population bases may be eroded. Moves to avoid these problems could well lead to severe imbalances in labour markets, slowing of major investment projects, and con- straints on aggregate growth for the Canadian economy as a whole.

The alternative to labour mobility is employment mobility, that is, move the demand for labour rather than the supply of labour. For energy-related investment projects, this is unlikely to be feasible. In other sectors of the economy, this course can be followed, but in general, unless the location is viable on its own in terms of relative costs of operation, access to raw materials and access to markets, this strategy is unlikely to meet with success in the long run.

Occupational Imbalances

The potential for labour market imbalances within any particular occupation is related to the ease of entry or exit from that occupation. For instance, it is unlikely that we could experience any persistent shortage of non-union, unskilled construction labour while aggregate labour markets were not experiencing excess demand. Entry into this occupation requires no training or prerequisites, so that requirements could easily be filled from existing labour supply. Highly trained machinists or surgeons, on the other hand, require extensive experience and training, so that if demand were to expand, there might be a considerable lag before the supply adjusted. In some occupations, where associations or unions have gained effective control of accreditation, shortages may actually be encouraged to ensure continuing employment at premium returns for members of the group. In a similar vein, persistent surpluses may be created if individuals have invested their human capital in occupations which face declines in demand. School teachers are a good example currently, where trained teachers are reluctant to seek alternative employment which does not use the capital they have acquired through training and experience.

In occupational mix, labour supply is likely to lag behind labour demand, as market signals are only gradually perceived and, where training programs are lengthy, the lag

may be long. The reaction is likely to be more rapid from new entrants into the labour force, as their "investment" in experience is less than those who have been in the labour force for an extended period of time. Thus, as we anticipate a slowdown in the number of new entrants in the 1980s, the labour market's ability to adapt to changes in types of demand may be weakened.

The changes in occupational demand will reflect the industrial structure of the economy. Those occupations associated with major investment projects (engineers, highly-skilled construction labour, etc.) are likely to face expanding demand, and those associated with the provision of public services (especially health and education) will face a slowdown in their rates of expansion.

We have not, in this study, attempted to analyse occupational imbalances closely. We do, however, wish to note the potential for such imbalances in this Section in light of the implications of our macroeconomic outlook for the industrial structure of the Canadian economy in the 1980s.

Of course, the three imbalances (sex, regional, occupational) may coincide, so that the potential for excess demand for more highly skilled occupations in a male-dominated industry in remote Saskatchewan in the 1980s appears high. Similarly, the likelihood of an excess supply of female, secondary school teachers in Eastern or Central Canada appears equally high. Whether or not these imbalances occur, and the

severity of the problem, will depend to a large extent on the Canadian economy's ability to anticipate shifts in demand and so re-orient labour supply.

Adjustment to Imbalances

The principal mechanism that our mixed economy has to adjust to surpluses or shortages of any resource is price. A shortage of any resource, other things being equal, will lead to a rise in its price, and conversely, a surplus will lead to a price decline. This holds true in labour markets as it does in other markets. Thus the wage rate, the price of labour, is the vehicle which provides signals to suppliers of labour regarding both how much and what type of labour to supply, and to employers, how to structure the use of labour in their processes of production.

The key aspect of wage rates as a signal is not their nominal level, but rather their relative level. From our discussion above on potential imbalances in the 1980s, then, we would expect higher wage rates for males, relative to females, higher wage rates in high growth regions relative to low growth regions, and higher wage rates in skills facing increasing demand relative to those facing less demand, as the market response (and correction mechanism) to those problems.

The wage rates in specific classes of labour,

regions, and skill sets, then, will send out signals to suppliers of labour to increase or decrease particular types of labour supply. For labour demand, the wage rate relative to other factors of production such as machinery, energy, and purchased inputs as well as the cost of labour relative to the output price of the production process, will determine how much labour, and what type of labour is required. And finally, wage rates in Canada, relative to wage rates in other countries, will be an important factor in where development and investment (and consequent labour demand) occur.

In our theoretical world this price mechanism automatically adjusts for any over- or under-supply of labour by shifting the demand and supply -- and it does it instantaneously. Unfortunately, the world we live in does not always conform to this theoretical model. And in fact, it is not transparently clear that this mechanism of price necessarily produces the most desirable results from the viewpoint of overall social goals. What we can say, is that theoretically it produces the most efficient allocation of labour, reflecting the availability of all other resources and the wants and needs of the society. This is not a trivial accomplishment, and it should be remembered in the formulation of labour market policy, what a vital role the wage rate, and particularly relative wage rates play.

How does this system break down? There are five

fundamental ways in which the price system can be seen to
break down as a mechanism for allocating resources. First,
the system does not operate instantaneously. There can be
long lags between the time when a certain class of labour is
in short supply and the market system produces the desired
response (that is increased supply). Long training and/or
apprenticeship programs can mean slow adjustment to new
levels of demand. Thus although the system might balance
eventually, there may be extended periods of imbalance.

The second cause of the failure of the price mecha-
nism is poor flows of information. That is, if wage rates
are adjusted to reflect surpluses or shortages, but the
information that higher wages exist in other areas or sectors
is not available (or understood) by suppliers of labour, they
will not make the appropriate adjustments, and the process of
balancing the labour markets will be slowed down or not
accomplished.

The third cause of failure of the automatic proces-
ses of adjustment is the implementation by governments of
legislation or regulation which impedes the market signals.
This typically reflects the political will to achieve other
social goals which may conflict with efficient allocation of
labour resources. Minimum wage laws, certain forms of income
redistribution, provincial employment preference regulations,
equal opportunity laws, etc., are all aimed at achieving

other goals than efficiency, and all have a cost to the economy in terms of efficiency. The aim of policy makers, once social goals have been identified, is to find the way to meet those goals with the least cost to labour market adjustment mechanisms. It must be recognized, however, that achieving these other targets will virtually always impede the automatic adjustment processes which balance the labour markets.

The fourth cause of market failure is the establishment by some group, employer or employee, of monopoly (monopsony) powers in the labour market. If such powers exist, it is then in the interest of these groups to delay or prevent full adjustment of the labour markets. On the labour supply side, certain unions and professional associations may have gained such power, and thus can maintain relatively high wage rates by controlling (and constraining) entry into their particular sectors of labour supply. On the labour demand side, the clearest examples of such activity occurs in "one company" towns, where a single major employer can keep labour costs "artificially" low by being observed as providing the only option to prospective workers.

The last cause of market breakdown arises from what we might call cultural immobility. The vast distances across Canada, and diversity of regional cultures, can lead to the inability to move labour supply from one part of the country to another. This problem can be particularly acute

when there are also language differences, but is not confined to problems of labour flows in or out of predominantly French-speaking regions.

In addition to these market failures, the costs of adjustment can prevent the balancing of labour markets. These might include the cost of acquiring knowledge, job search or hiring costs, the cost of movement from one place to another, or the scrappage of existing capital (either intellectual capital or physical capital). These costs impose a "wedge" between the employer's labour cost and the employee's net return. The reduction of such costs is one way to improve the market adjustment process.

The degree to which the market cannot be effective in reallocating shortages or surpluses of labour will affect the aggregate level of unemployment which represents the potential labour force utilization. The higher the unemployment rate, the lower the long-term potential output for the economy as a whole. An underutilized labour force has the same implications for wealth as an underutilized capital stock. Effective policies to reduce the impact of the causes of breakdowns in the labour market adjustment mechanism can thus increase the potential wealth of the Canadian society.

SECTION F

F. Descriptive Analyses of Impact Cases

There is a wide variety of factors which could alter the economic outlook for the Canadian economy. We have selected a few such factors with which we can illustrate representative shocks which might affect our economic environment. The question we are addressing in this section is what would be the impact on the Canadian economy of a specific change in one of our explicit or implicit assumptions. Within the reasonably narrow range of what we perceive to be likely paths for the Canadian economy, we expect that the impacts of such changes will be relatively insensitive to the economic environment upon which the change is made. We have chosen the Fast Growth Reference Case as a Base Case and used our model to measure what the impacts of the changes to the chosen assumptions would be.

The four Impact Cases we have studied measure the effects of:

1) The Cancellation of Major Investment Projects

The equivalent investment flows of two tar sands plants and two pipeline projects (Alaska and Polar) which were assumed to have taken place in the Base Case were eliminated

Direct Decrease in Investment ($1971 millions)

1985	1990
-752	-1251

2) Stronger Foreign Demand

The U.S. and Rest-of-World economies were assumed
to grow more rapidly than in the Base Case assumptions.

Average Annual Rates of Growth 1981-90

	U.S. Real GNP	U.S. CPI
Impact Case	3.5%	7.6%
Base Case	2.9%	7.9%

3) Higher Foreign Inflation

The U.S. and Rest-of-World economies were assumed to
experience continuing high rates of inflation.

Average Annual Rates of Growth 1981-90

	U.S. Real GNP	U.S. CPI
Impact Case	2.6%	8.8%
Base Case	2.9%	7.9%

4) Tighter Monetary Policy

Canadian interest rates were assumed to be higher
over the 1980s than they were in the Base Case.

3 Month Treasury Bill Rates

	1982	1985	1988	1990
Impact Case	11.0	10.0	9.1	8.7
Base Case	8.9	8.4	8.1	7.7

A brief description of each of these Impact Cases
completes Section E, and Section F illustrates the impact of
each of these shocks; that is the difference in the economy
which is generated by these altered assumptions. It should be
remembered that the macroeconomic framework produced in these
impact studies depends upon the Base Case chosen, so that the
appropriate way to view these cases is relative to the Base
Case, in this instance the Fast Growth Reference Case.

Low Investment Case

The Base Case used in this study assumes the construction of various large energy related projects which are sensitive to government policy decisions and general market forces. In this regard, the Alaskan and Polar Gas pipelines and the Tar Sands 3 and Cold Lake oil sands projects are typical of the types of large discrete projects which could encounter difficulties in the coming years. Consequently, we have produced an impact study in which the aforementioned pipeline projects will be cancelled and the oil sands projects mentioned above delayed until sometime during the 1990s. Cumulatively, these projects represent $6.7 billion (1971$) worth of investment activity.

The growth path of this scenario follows the same general path, as in the base case; slow real growth in 1980 and 1981, and a strong recovery in 1982 once the U.S. recession has run its course. We continue to generate real growth, but at a slower rate, so that the level of real economic activity is reduced by 1.4% by 1990.

The most significant changes from the base case in this scenario is in the composition and level of employment and in the current account and Federal government balances.

The services exports associated with the Alaskan gas pipeline, scheduled to come on stream in 1986, are lost, and the potential oil production from the Cold Lake oil sands, also

scheduled to begin production in 1986, must be replaced by imported oil. As a result, the current account balance averages a <u>deficit</u> of $2.4 billion in the 1986-90 period in contrast to an average surplus of $0.3 billion in the Base Case. Total employment in 1990 is reduced by 125 thousand relative to the Base Case. As expected construction workers and those from sectors of the economy that provide material and labour inputs to the construction industry (i.e., manufacturing, transportation and business services) are most adversely affected by the weaker levels of investment (see Appendix 3). The post 1985 reduction in oil production and services exports also impacts mining, transportation and business services employment. The unemployment rate averages about 6.2% in the second half of the decade, compared to 5.6% in the Base Case.

As a result of increased oil imports and relatively high levels of unemployment, a large Federal government deficit persists throughout the decade.

Energy Investment Base Case
(Millions Current Dollars)

Industry Years	Mining	Pipelines	Refining	Utilities	Total
1981	5,248.0	634.6	314.1	7,521.0	13,717.0
1982	6,200.0	1,189.1	428.6	7,968.0	15,786.0
1983	7,420.0	1,625.5	545.7	8,927.0	18,519.0
1984	8,613.0	1,751.6	588.0	10,060.0	21,013.0
1985	10,096.0	2,641.3	556.7	11,223.0	24,518.0
1986	11,580.0	3,248.2	562.2	12,115.0	27,505.0
1987	13,432.0	2,709.8	574.8	13,168.0	29,884.0
1988	14,547.0	2,588.6	629.0	14,402.0	32,167.0
1989	16,499.0	4,376.7	682.9	15,686.0	37,244.0
1990	18,673.0	6,000.3	733.5	16,981.0	42,387.0

Energy Investment
Low Investment Case
(Millions Current Dollars)

Industry Years	Mining	Pipelines	Refining	Utilities	Total
1981	4,780.0	633.5	313.1	7,511.0	13,238.0
1982	5,650.0	661.3	425.1	7,947.0	14,683.0
1983	6,791.0	731.3	540.8	8,897.0	16,960.0
1984	7,907.0	852.5	584.3	10,027.0	19,370.0
1985	9,301.0	994.1	552.6	11,173.0	22,021.0
1986	10,723.0	1,148.6	553.6	12,055.0	24,480.0
1987	12,512.0	1,305.9	565.0	13,133.0	27,515.0
1988	13,561.0	1,457.6	622.1	14,382.0	30,023.0
1989	15,405.0	1,594.4	670.1	15,645.0	33,314.0
1990	17,463.0	1,733.2	714.4	16,909.0	36,820.0

Energy Investment
Base Case vs. Low Investment Case
(Millions Current Dollars)

Industry Years	Mining	Pipelines	Refining	Utilities	Total
1981	468.0	1.1	1.0	10.0	479.0
1982	550.0	527.8	3.5	21.0	1,103.0
1983	629.0	894.2	4.9	30.0	1,559.0
1984	706.0	899.1	3.7	33.0	1,643.0
1985	795.0	1,647.2	4.1	50.0	2,497.0
1986	857.0	2,099.6	8.6	60.0	3,025.0
1987	920.0	1,403.9	9.8	35.0	2,369.0
1988	986.0	1,131.0	6.9	20.0	2,144.0
1989	1,094.0	2,782.3	12.8	41.0	3,930.0
1990	1,210.0	4,267.1	19.1	72.0	5,567.0

Energy Investment Cumulative
Low Investment Case
(Millions Current Dollars)

Industry	Mining	Pipelines	Refining	Utilities	Total
1981-1990	104,092.0	11,112.0	5,541.0	117,678.0	238,424.0

Base Case
(Millions Current Dollars)

Industry	Mining	Pipelines	Refining	Utilities	Total
1981-1990	112,308.0	26,766.0	5,615.0	118,051.0	262,740.0

Low Investment Case
Macroeconomic Framework

	1980	1981	1982-85*	1986-90*
Percentage Growth in:				
Real GNP	0.2	1.8	4.2	3.5
GNP Deflator	10.5	8.7	5.9	5.9
GNP ($C)	10.7	10.7	10.3	9.7
Labour Force	1.0	0.5	2.0	1.7
Employment	2.0	1.3	2.4	2.0
RDP/Employed Person	-2.3	0.8	2.1	1.8
CPI	9.6	9.9	6.3	5.9
Average Wage Rate	8.6	10.0	8.1	7.6

* Average annual rate of growth

Levels:				
Unemployment Rate (%)	7.9	8.4	7.2	6.2
Current Account Balance (Billions of $C)	-4.2	-4.6	-8.3	-2.4
Government Balance (Billions of $C)	-3.6	-4.4	-8.0	-8.7
Wages and Salaries as a Percentage of National Income	70.56	70.33	70.07	70.83
Corporate Profits as a Percentage of National Income	16.47	17.03	17.78	17.64

* Average levels over the period.

Faster World Growth Case

The Canadian economy is highly dependent on international trade and as such it is very sensitive to changes in foreign economic activity. This impact study examines the effects on the Canadian economy of stronger world growth.

For this scenario we assume Japan, Europe and the Third World countries have real industrial production growth rates 0.5% higher than in the Base Case. Real U.S. GNP will grow at an average annual rate of 3.5% from 1981 on, up 0.6% from the Base Case while the inflation rate, particularly before 1985, will be significantly lower. The reduction in the inflation rate is attributable to faster growth in productivity, which slows the growth of unit labour costs. Consumer demand is strengthened by an increase in personal tax crédits.

Canadian exports receive the immediate benefits from the stronger foreign economies. The value of exports is up 1.88% in 1983 and by 1990 this has risen to 5.9% above the Base Case level. Imports have also risen in response to the lower U.S. inflation rate and through stronger Canadian final demand. With lower relative prices of foreign produced goods, imports will rise displacing some domestic production. This is especially true in industries where Canadian producers compete directly with foreign firms. The importation of finished goods, chemicals and fertilizers and raw materials are up in response to the lower

relative prices. However, the improvement in exports exceeds the increase in imports with the result that the current account balance becomes a surplus in 1987, one year earlier than in the Base Case.

The stronger international trade pushes real GNP up 1.3% over the Base Case by 1990. This corresponds to an additional 157 thousand jobs. Growth is first seen in the industries which have the largest international markets-fishing, pulp and paper and primary metals have large gains in real output as does the automotive sector. To support the increase in economic activity the production of railroad rolling stock and, in general, all transportation equipment has expanded. As the effects of the increase in production works its way through the economy the demand for goods unrelated to exports begins to rise (i.e., consumer and investment goods).

The areas of the economy supplying the bulk of the increase in employment are manufacturing, wholesale trade and tertiary sectors. Mining has the largest percentage increase in employment at 8% by 1990.

Faster World Growth: U.S. Economic Indicators

	Real GNP ($ U.S. Trillions)		%Δ CPI		%Δ Productivity	
	Fast	Base	Fast	Base	Fast	Base
1980	1.43	1.43	14.0	14.2	-0.8	-0.8
1981	1.47	1.45	9.7	10.9	1.6	0.2
1982	1.53	1.42	7.8	9.0	2.4	1.9
1983	1.58	1.54	7.2	8.0	1.6	1.5
1984	1.64	1.59	7.4	7.3	1.9	1.6
1985	1.69	1.63	8.2	8.3	1.8	1.2
1986	1.75	1.69	8.2	8.3	2.0	1.7
1987	1.81	1.74	8.5	8.5	2.0	1.6
1988	1.83	1.79	7.5	7.5	2.1	1.7
1989	1.93	1.84	7.2	7.2	2.0	1.6
1990	1.99	1.89	7.2	7.2	2.0	1.6

Average Annual Rates of Growth, 1981-1990

U.S.	Base Case	Fast Growth
Real GNP	2.9%	3.5%
CPI	7.9%	7.6%

Faster World and U.S. Growth
Macroeconomic Framework

	1980	1981	1982-85*	1986-90*
Percentage Growth in:				
Real GNP	1.19	2.41	4.34	3.86
GNP Deflator	10.53	8.73	5.81	5.95
GNP ($C)	10.75	11.36	10.41	10.03
Labour Force	2.46	1.88	2.00	1.78
Employment	2.01	1.67	2.52	2.27
RDP/Employed Person	-2.24	1.09	2.09	1.81
CPI	9.62	9.64	6.02	5.80
Average Wage Rate	8.56	9.91	7.90	7.56

* Average annual rate of growth

Levels:

	1980	1981	1982-85*	1986-90*
Unemployment Rate (%)	7.84	8.04	6.73	4.91
Current Account Balance (Billions of $C)	-4.14	-3.74	-6.59	+7.79
Government Balance (Billions of $C)	-3.56	-3.77	-5.90	1.00
Wages and Salaries as a Percentage of National Income	70.536	70.065	69.68	69.95
Corporate Profits as a Percentage of National Income	16.48	17.20	18.06	18.29

* Average levels over the period

Higher United States Inflation Case

In contrast to the Base Case where the U.S. has fully recovered from the 1980-81 recession by 1983, this study will look at the impact on Canada of continuing high levels of inflation in the U.S. The main difference lies in the productivity of U.S. workers which remains lower than in the Base Case. A tight monetary policy is introduced in the latter half of the decade in an attempt to lower the inflation rate. The resulting U.S. average annual growth in real GNP is 2.5% from 1981 to 1990 down from 2.9% in the Base Case. The greatest decline occurs after 1983. We have also assumed all other countries which trade with Canada have slower economic growth.

The higher U.S. inflation rate and slower growth affects the Canadian economy through its international trade links. Investment by foreign countries is less than in the Base Case and this shows up as a softening of the markets for Canada's raw resources. Most exporters manage to make minor gains from improved cost competitiveness in the beginning of the decade but only the forest products industry is not severly affected after 1983. It is bouyed by strong paper sales attributable to an improvement in the relative price of Canadian paper as the U.S. inflation rate remains high. The mining industry bears the brunt of the decline in raw materials exports.

High U.S. unemployment and the stunted growth of consumer spending have their greatest effect on Canada's exports of finished goods. This trade sector is off 5% by 1990 when compared to the Base Case.

The poor performance of the export sector has a dampening effect through out the Canadian economy. Investment in new plant and equipment is down in relation to the Base Case. The slower growth in the capital stock decreases the productivity of labour which is transformed into higher per unit labour costs. Combined with the higher prices for imports (due to the high U.S. inflation) the Canadian inflation rate exceeds that in the Base Case. Real GNP is down 1% compared to the Base Case by 1990 and this is matched by an equal decrease in employment. Of the 136 thousand fewer jobs in this scenario over one quarter are lost in manufacturing. This is the result of the poor international market for finished goods and the domestic decline in demand for durable and semi-durable goods.

High United States Inflation: U.S. Economic Indicators

	Real GNP ($ U.S. Trillions)		%Δ CPI		%Δ Productivity	
	High Inflation	Base	High Inflation	Base	High Inflation	Base
1980	1.43	1.43	14.0	14.2	-1.3	-0.8
1981	1.42	1.45	11.2	10.9	0.3	0.2
1982	1.47	1.42	10.1	9.0	1.7	1.9
1983	1.51	1.54	8.2	8.0	1.1	1.5
1984	1.56	1.59	8.3	7.3	1.4	1.6
1985	1.59	1.63	9.2	8.3	0.7	1.2
1986	1.63	1.69	9.3	8.3	1.0	1.7
1987	1.67	1.74	9.8	8.5	1.1	1.6
1988	1.71	1.79	8.6	7.5	1.6	1.7
1989	1.75	1.84	8.2	7.2	1.1	1.6
1990	1.79	1.89	8.2	7.2	1.1	1.6

Average Annual Rates of Growth, 1981-90

U.S.	Base	High Inflation
Real GNP	2.9%	2.6%
CPI	7.9%	8.8%

Higher U.S. Inflation

Macroeconomic Framework

	1980	1981	1982-85*	1986-90*
Percentage Growth in:				
Real GNP	0.14	1.74	4.2	3.62
GNP Deflator	10.38	8.66	6.06	6.18
GNP ($C)	10.59	10.55	10.51	10.02
Labour Force	2.48	1.78	1.99	1.75
Employment	1.99	1.14	2.44	1.99
RDP/Employed Person	-2.25	0.83	2.03	1.84
CPI	9.47	9.86	6.53	6.21
Average Wage Rate	8.45	9.82	8.33	7.98

* Average annual rate of growth

Levels:

	1980	1981	1982-85*	1986-90*
Unemployment Rate (%)	7.87	8.45	7.09	6.23
Current Account Balance (Billions of $C)	-4.53	-5.39	-10.05	-5.99
Government Balance (Billions of $C)	-3.923	-3.84	-7.84	-9.32
Wages and Salaries as a Percentage of National Income	70.56	70.10	70.30	71.27
Corporate Profits as a Percentage of National Income	16.41	17.12	17.67	17.31

* Average levels over the period

Tight Monetary Policy Case

The Bank of Canada has in recent years committed itself to a policy of controlling the growth in the supply of money (M1). The growth in nominal GNP implied in all our scenarios suggests that the growth in the availability of all types of money must grow more rapidly than the Bank's target for M1 growth. If the money markets are not successful in changing the relationships between various other types of money and M1 under the interest rate regime implied in our Reference Scenarios, then the Bank of Canada will be forced to increase interest rates if it is to meet its stated targets. This impact case examines the implications of such a situation.

In general, we would expect a higher interest rate regime to have a number of specific effects. First, it would discourage borrowing and encourage lending in all sectors (including the foreign sector). Final demand which is dependent on borrowing would therefore be discouraged. This would principally affect investment demand (both residential and nonresidential) as it is heavily dependent on borrowed funds, but would also impact consumer demand, particularly on durable goods. The second effect is that higher interest rates would transfer wealth (income from interest and dividends) from sectors of the economy which are net borrowers to those which are net lenders. In the Canadian context in the 1980s this suggests an increase in income to the personal and foreign sectors, and increased payments from the government (especially the Federal Government) and corporate sectors.

In the Tight Monetary Policy Impact Case, the improved income to consumers outweighs the effects of discouraged consumer borrowing so that consumer expenditure is higher than in the Base Case. However, the reductions in investment demand, government demand (as budgetary positions are weakened) and exports (reflecting the reductions in Canada's capital stock), lead to an overall decline in economic activity relative to the Base Case peaking at $-1.9 billion (1971$) in 1985 and continuing in the $-1.6 to $-1.9 billion range through 1990.

Employment is reduced by over 100 thousand in the mid 1980s, and there is a permanent loss of 80-90 thousand jobs in the long run. The manufacturing sector, as the supplier to investment and export demand, is hard hit with a loss of over 30 thousand jobs in 1985, and 20 thousand in 1990. Construction, services (both public and private), trade (particularly wholesale) and transportation also absorb substantial employment losses.

The unemployment rate is raised by over .5% for most of the 1980s, and the government balance (Federal especially) deteriorates reflecting higher interest payments and a smaller revenue base, in spite of reduced expenditures on goods and services. The trade balances improve in the short run as Canadian demand is lowered, but begin to deteriorate in the long run as the reduction in Canada's capital stock, resulting from weaker investment, curtails export potential.

Macroeconomic Framework
Tight Monetary Policy Case

Forecast Highlights - Post Workshop I, 1980

	1980	1981	1982-85*	1986-90*
Percentage Growth In:				
Real GNP	0.17	1.84	4.0	3.7
GNP Deflator	10.5	8.9	6.1	5.9
GNP ($C)	10.7	10.9	10.4	9.9
Labour Force	2.5	1.8	2.0	1.8
Employment	2.0	1.3	2.2	2.2
RDP/Employed Person	-2.3	0.8	2.1	1.7
CPI	9.64	9.99	6.5	5.8
Average Wage Rate	8.6	10.1	8.4	7.5

* Average annual rate of growth

Levels:				
Unemployment Rate (%)	7.9	8.4	7.5	6.2
Current Account Balance (Billions of $C)	-4.2	-4.8	-8.7	-1.1
Government Balance (Billions of $C)	-9.3	-10.5	-15.2	-17.4
Wages and Salaries as a Percentage of National Income	70.6	70.3	70.1	70.6
Corporate Profits as a Percentage of National Income	16.5	17.1	17.8	17.6

* Average levels over the period

SECTION G

G.   Impact Studies Comparison

By assessing the impacts on key economic variables
of our various alternatives against the Base Case (that is, the
High Growth Reference Case) we can get a measure of the sensitivity
of the Canadian economy through the 1980s to the potential shocks
we are examining. The sensitivity should be roughly symmetrical
(that is, give similar results if the sign on the impact is changed)
and relatively insensitive to the starting point (that is, we would
expect similar impact results if we were to use the Slow Growth
Reference Case as a Base Case).

In the Base Case, by 1990 we are indicating a level of
$187.9 billion in 1971$ for real Gross National Product (GNP),
a 44% increase from the 1980 level, and $6.3 billion (3.5%) above
our Slow Growth Reference Case. For the Investment Delay
Case, the effect of reducing investment by $1.3 billion (1971$)
is to lower the flow of real GNP by $2.6 billion in 1990, when
the second round effects on incomes and other sectors are
taken into account. Stronger foreign demand induces second round
effects through job creation and higher incomes, so that our High
Foreign Demand Case has a level of real GNP $2.5 billion higher
than in the Base Case. Strength in the economies of Canada's
principal trading partners can be expected to lead to a permanent
long run expansion of the Canadian economy. However, as we illus-
trate in the High Foreign Inflation Case, the weaker performance
which might be caused by continuing high levels of inflation and
resistance by monetary authorities of our trading partners would
have a correspondingly negative effect. The improvement in

Real GNP
$ 1971 Billions

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	132.4	139.4	146.1	151.3	156.7	162.6	168.6	174.9	181.2	187.9
Slow Growth	132.0	138.4	144.2	148.2	152.2	157.1	162.6	168.6	174.8	181.6
Impact Cases: (Differences)										
Investment Delay	-.29	-.63	-.83	-.02	-1.08	-1.49	-1.72	-1.61	-2.18	-2.64
High Foreign Demand	+.56	+.48	+.22	+.50	+.85	+.89	+1.15	+1.37	+1.75	+2.47
High Foreign Inflation	-.24	-.03	-.43	-.66	-.96	-1.32	-1.62	-1.71	-1.81	-1.87
Tight Monetary Policy	-.18	-.54	-.94	-1.20	-1.27	-1.15	-1.03	-.94	-.95	-1.02

comparative costs of production would partially offset the deterioration in net trade, particularly in the first couple of years of this scenario. Nonetheless, by 1990, the impact is to lessen real GNP by $1.9 billion (1%). The impact of tight monetary policy in Canada is also to reduce economic activity in Canada, with the worst effect felt in the mid-1980s. Real GNP in this case is more severely affected than in either the Low Investment or High Foreign Inflation Cases in 1985, but less so by 1990.

Between our two Reference Cases, the key difference in inflation results from the difference in energy prices. As energy prices impact the CPI, wage rates adjust (partially) leading to second round impacts on prices. In addition, the consequent slowing in the growth of final demand reduces the rate of growth of productivity so that unit labour costs are doubly impacted. The result is a CPI level which is 5.5% lower in the Fast Growth Reference Case by 1985, and 6.2% below the Slow Growth Reference Case by 1990.

In the Reduced Investment Case, because the investment projects which were "cancelled" were in the energy sector (pipe-lines, tar sands plants) where prices are regulated, there was no direct effect on price from the impact on investment. Marginally higher prices in the long run result from the productivity effects of lower demand in other sectors. In our two Impact Cases which examine changes in the economies of our trading part-ners, the effects of foreign inflation rates can be seen. In

CPI – Growth Rates

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases:										
Fast Growth	9.9	7.4	6.0	5.8	6.1	6.2	6.4	6.1	5.5	5.0
Slow Growth	10.5	8.4	7.2	7.2	7.7	7.2	6.7	6.3	5.4	4.7
Impact Cases:										
Investment Delay	9.9	7.3	6.0	5.7	6.0	6.2	6.5	6.2	5.5	5.0
High Foreign Demand	9.6	7.0	5.7	5.6	5.9	6.0	6.3	6.1	5.1	5.1
High Foreign Inflation	9.9	7.5	6.2	6.0	6.3	6.6	6.9	6.6	5.8	5.2
Tight Monetary Policy	10.0	7.6	6.3	6.0	6.2	6.2	6.4	6.0	5.4	4.9

CPI – Comparison to Base Case Levels

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels, 1971=100)										
Fast Growth	230	248	262	278	294	313	333	353	373	391
Slow Growth	232	251	269	289	311	333	356	378	399	417
Impact Cases: (% Difference)										
Investment Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
High Foreign Demand	-0.2	-0.6	-0.9	-1.1	-1.3	-1.4	-1.5	-1.6	-1.7	-1.5
High Foreign Inflation	-0.2	-0.3	0.1	0.4	0.7	1.0	1.5	1.9	2.2	2.4
Tight Monetary Policy	0.8	0.3	0.5	0.8	0.9	1.0	0.9	0.8	0.7	0.6

-89-

part, the results are based on no exchange rate effects, and a
different assumption here might neutralize the price effects
in Canada. In the cases as we have shown them, inflation per-
formance abroad is transmitted into Canada via import prices,
with reaction by domestic wage rates enhancing the direct
impacts. In the High Foreign Inflation Case, Canada's CPI is
0.6% above the Base Case level by 1990, while in the High Foreign
Demand Case, it is 0.4% lower. For the Tight Monetary Policy
Case, we assumed that aggregate money supply is passive (which
seems to be borne out by recent statistics) so that even though
growth of M1 is constrained through higher interest rates, total
money supply remains adequate to produce the indicated level of
activity. More briefly, there is no direct effect on inflation
from reduced monetary growth. Higher interest rates reduce
demand and raise capital costs, and this is reflected in
slightly higher prices throughout the impact.

It should be noted that, unlike the difference between
the two Reference Cases, the differences generated in our impact
scenarios are principally impacts on final demand rather than
on price, so that the price effects in all cases are relatively
modest.

Of our four Impact Cases, employment is most affected
(positively and negatively) in the High Foreign Demand and High
Foreign Inflation Cases in 1990, although in 1985, the Tight
Monetary Policy Case shows the largest impact by far. In general,
employment effects reflect roughly the effects on real GNP.

Total Employment
(Thousands of People)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases:										
Fast Growth	10720	11040	11336	11574	11818	12074	12324	12582	12840	13133
Slow Growth	10705	10994	11246	11426	11597	11798	12011	12239	12479	12758
Impact Cases: (Differences)										
Investment Delay	-12.7	-28.8	-40.5	-41.4	-53.0	-69.1	-73.2	-74.7	-98.8	-125.1
High Foreign Demand	31.8	26.5	16.7	37.1	59.8	66.0	85.3	99.2	123.5	157.0
High Foreign Inflation	-24.7	0.7	-13.9	-21.8	-39.5	-62.0	-82.0	-99.0	-119.7	-136.4
Tight Monetary Policy	-10.9	-35.6	-76.4	-103.6	-119.0	-105.2	-91.6	-81.0	-81.7	-91.5

Employment Change (000's) per $1 Billion Change in Real GNP

Case	1985	1990
Investment Case	49.1	47.4
High Foreign Demand	70.3	63.6
High Foreign Inflation	41.1	72.9
Tight Monetary Policy	93.7	89.7

The differences between the employment loss (or gain) per real GNP loss (or gain) reflect the industrial structure of the impacts on output and employment. Those impacts which have major effects on primary and secondary sector industries (where productivity per worker is high and relatively sensitive to levels of output) tend to have a lower proportional impact on employment.

The export markets provide a high proportion of the demand for Canadian raw materials, so it is not surprising that the two Impact Cases which examine changes in the economies of our trading partners have relatively large proportions of the overall employment effects in the primary sector. The Tight Monetary Policy Case, where the effects are principally domestic, and spread more evenly amongst all sectors of domestic demand, has the lowest share of its employment impact on the primary sector. In all cases, reflecting the basic structure of employ- ment, the share of the impact represented by primary sector employment is relatively small.

The secondary sector effects in all cases are dominated by investment effects (construction, machinery and equipment purchases) and by export demand for manufactured goods. The

Investment Case has the strongest impact (proportionally) on the the secondary sector employment. The High Foreign Inflation Case has mixed effects as trade flows are subject to conflicting signals of price and demand.

The effects on the services (tertiary) sector tends to grow over time, as the effects of reduced (or increased) demands for goods eventually get passed on to demands for services. In the long run, the effects on government balances of reduced (or increased) economic activity will affect publicly-provided services as well. The tertiary sector employment, in most shocks to the economy, will exhibit less sensitivity than the primary or secondary sector level of employment in the short run, but in the long run, most impacts will tend to be spread more evenly across industries relative to their overall shares of employment. This is illustrated in our four impact cases in the table below.

Shares of Employment Impact by Sector

Investment Case	Level Impact	Share of Impact		
		Primary	Secondary	Tertiary
1981	-12.7	9.5%	65.5%	23.7%
1985	-53.0	6.0%	47.7%	46.2%
1990	-125.1	8.3%	38.0%	53.6%
High Foreign Demand Case				
1981	+31.8	9.7%	57.2%	32.7%
1985	+59.8	11.4%	36.5%	52.0%
1990	+157.0	10.7%	38.0%	51.3%

Employment – Primary Sector
(Thousands of People)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	757	773	784	794	808	828	848	866	881	893
Slow Growth	757	770	779	785	796	813	831	847	861	873
Impact Cases: (Differences)										
Investment Delay	-1.2	-2.2	-2.6	2.6	-3.2	-5.4	-6.7	-7.3	-9.2	-10.5
High Foreign Demand	3.1	2.8	2.3	4.4	6.8	7.8	9.5	11.8	13.9	16.8
High Foreign Inflatio..	-2.1	-1.6	-2.2	-2.1	-3.9	-5.9	-7.4	-7.8	-10.0	-12.6
Tight Monetary Policy	-0.8	-2.1	-3.5	-3.9	-3.0	-2.0	-1.2	-1.3	-1.8	-2.9

Employment - Secondary Sector

(Thousands of People)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	2755	2884	2954	2972	3004	3043	3075	3115	3153	3210
Slow Growth	2749	2868	2923	2926	2939	2968	2996	3033	3072	3130
Impact Cases: (Differences)										
Investment Delay	-8.3	-16.3	-19.9	-18.0	-25.3	-30.5	-24.4	-22.6	-37.5	-47.5
High Foreign Demand	18.2	8.7	2.6	11.6	21.8	21.5	27.6	33.1	42.0	59.6
High Foreign Inflation	-4.3	-3.3	-13.4	-16.6	-21.5	-30.5	-36.7	-36.4	-40.9	-47.9
Tight Monetary Policy	-6.5	-19.7	-32.4	-38.9	-47.3	-39.4	-32.8	-27.6	-28.3	-31.8

Employment - Goods Sector (Primary and Secondary)

(Thousands of People)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	3512	3657	3737	3766	3813	3871	3923	3981	4034	4103
Slow Growth	3506	3638	3702	3711	3735	3781	3827	3880	3933	4003
Impact Cases: (Differences)										
Investment Delay	-9.6	-18.6	-22.6	-20.6	-28.5	-35.8	-31.0	-29.9	-46.7	-58.0
High Foreign Demand	21.3	11.5	5.0	16.0	28.6	29.3	37.1	44.9	56.0	76.3
High Foreign Inflation	-6.4	-4.9	-15.6	-18.7	-25.4	-36.0	-44.1	-44.3	-50.9	-60.6
Tight Monetary Policy	-7.3	-21.8	-35.9	-42.8	-50.3	-41.4	-34.0	-28.9	-30.1	-34.7

Employment - Tertiary Sector
(Thousands of People)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	7208	7383	7600	7809	8005	8203	8400	8600	8806	9030
Slow Growth	7199	7356	7544	7715	7862	8017	8184	8359	8546	8755
Impact Cases: (Differences)										
Investment Delay	-3.0	-10.3	-17.9	-20.8	-24.5	-33.3	-42.2	-44.8	-52.2	-67.1
High Foreign Demand	10.4	15.0	11.7	21.1	31.1	36.6	48.2	54.3	67.6	80.6
High Foreign Inflation	-18.3	5.6	1.7	-3.1	-14.0	-26.6	-37.8	-54.7	-68.8	-75.9
Tight Monetary Policy	-3.6	-13.8	-40.5	-60.8	-68.7	-63.8	-57.6	-52.1	-51.6	-56.8

Informetrica • Ottawa, Canada • Effective Economic Research

	Level Impact	Share of Impact		
High Foreign Inflation Case		Primary	Secondary	Tertiary
1981	-24.7	8.5%	17.4%	71.1%
1985	-39.5	9.9%	54.4%	35.4%
1990	-136.4	9.2%	35.1%	55.6%
Tight Monetary Policy Case				
1981	-10.9	7.3%	59.6%	33.0%
1985	-119.0	2.5%	39.7%	57.7%
1990	-91.5	3.2%	34.8%	62.0%

The effects on the unemployment rate are muted by responses from the labour supply side. More employment induces higher participation rates so that as employment rises, the labour force also rises. Depending upon the influence of other factors (such as the real wage rate), the labour force changes in our scenarios by 12-18% of the change in employment. The unemployment rate variation in the impact cases is between -1% in the High Foreign Demand Case and +0.36% in the High Foreign Inflation Case. As noted above, the impact in the Tight Monetary Policy Case peaks in 1985. Under our assumptions, the unemployment rate is raised by 0.8%. If the impacts of the Tight Monetary Policy Case were to be applied to the Slow Growth Reference Scenario, we would show an unemployment rate of well above 8% through 1989.

The effect on the unemployment rate is reflected in the overall government balance as higher transfer payments and a smaller tax base result from lower levels of employment.

Labour Force

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	11689	11943	12182	12417	12651	12874	13098	13337	13568	13806
Slow Growth	11685	11929	12157	12378	12595	12809	13032	13270	13504	13744
Impact Cases: (Differences)										
Investment Delay	-1.4	-4.5	-7.1	-7.8	-8.5	-11.2	-13.2	-13.8	-16.0	-20.4
High Foreign Demand	3.3	7.8	5.6	5.5	6.8	9.2	11.5	11.9	15.8	19.6
High Foreign Inflation	-6.1	0.05	-2.0	-4.3	-8.5	-12.7	-16.0	-20.1	-20.3	-18.3
Tight Monetary Policy	-1.5	-5.9	-14.1	-19.2	-19.0	-17.3	-14.1	-12.7	-13.4	-16.5

Unemployment Rate
(Percentage)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	8.29	7.56	6.95	6.78	6.58	6.21	5.91	5.66	5.36	4.87
Slow Growth	8.39	7.84	7.49	7.69	7.93	7.89	7.84	7.77	7.59	7.18
Impact Cases: (Differences)										
Investment Delay	0.10	0.21	0.28	0.27	0.36	0.46	0.46	0.46	0.62	0.77
High Foreign Demand	-0.25	0.16	-0.09	-0.26	-0.42	-0.44	-0.57	-0.66	-0.80	-1.00
High Foreign Inflation	0.16	-.01	0.09	0.14	0.25	0.39	0.51	0.60	0.74	0.86
Tight Monetary Policy	0.82	0.25	0.52	0.69	0.80	0.69	0.60	0.52	0.51	0.55

Informetrica • Ottawa, Canada • Effective Economic Research

As shown in the accompanying tables, the government balance is relatively volatile with respect to changes in the economic environment. In the long run, improvements follow in all cases from a stronger overall economy, except in the case where the prime focus of policy is to aggressively move to balance the federal budget (the Slow Growth Reference Case). In this Case, even though the tax base is reduced by weaker income growth, the associated losses of tax revenue (and increases in transfer payments) are not as large as the direct revenue for governments associated with the higher oil prices. Because we have assumed no recycling, the governments' budgetary positions are improved throughout the 1980s relative to the Fast Growth Reference Case.

Government Balance (All Levels of Government)
(Millions of Current Dollars)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	-4183	-4275	-6056	-8621	-9917	-9906	-6716	-4260	-2429	1213
Slow Growth	-2917	-1595	-1477	-1671	256	-470	2369	4877	6397	10018
Impact Cases: (Differences)										
Investment Delay	-266	515	-678	-694	-1101	-2064	-3081	-3911	-5537	-6669
High Foreign Demand	407	560	831	1478	2385	3045	4031	5177	6491	8374
High Foreign Inflation	341	52	-514	-880	-1147	-2003	-3238	-4607	-6215	-8457
Tight Monetary Policy	88	5	-436	-885	-1319	-1372	-1511	-1436	-1476	-1553

Current Account Balance
(Millions of Current Dollars)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Reference Cases: (Levels)										
Fast Growth	-4789	-5208	-8743	-10780	-11110	-8441	-2164	2913	3926	5477
Slow Growth	-4287	-4444	-7745	-9459	-9213	-6899	-854	4169	5077	6534
Impact Cases: (Differences)										
Investment Delay	171	424	629	687	983	-130	-2612	-3759	-3785	-3373
High Foreign Demand	1045	1143	1857	2636	3810	4709	6013	7678	9193	9584
High Foreign Inflation	-600	-755	-916	-846	-1858	-3205	-4383	-5712	-7562	-10817
Tight Monetary Policy	-4	110	363	409	28	-683	-1283	-1743	-1808	-1596

SECTION H

H. Conclusions

This study was not intended to be a detailed exami-
nation of potential problems or imbalances of labour markets
through the 1980s, but rather to develop a broad framework
within which these issues can be analysed. Nonetheless, even
at the relatively high level of aggregation at which we are
dealing, certain characteristics of labour markets are evident.

1. The growth rate of labour supply will be less rapid in the
    1980s than it was in the 1960s or the 1970s as the growth in
    civilian source population slows, the expansion of partici-
    pation rate is less rapid, and (we assume) the new immigra-
    tion policy keeps net immigration to a level of 50,000 per
    year.

2. The demand for labour will be strongly affected by produc-
    tivity performance. The range of reasonable possibilities
    for productivity growth is wide, and not independent of
    overall economic conditions. We believe that productivity
    growth is likely to recover from its weak performance in the
    late 1970s, but not to achieve the rates of growth reached
    in the 1950s and 1960s.

3. Economic growth, and hence expansion of labour demand, is
    likely to be more rapid in resource-based industries (espe-
    cially energy-related) in areas "remote" from the current
    population and industrial centers of Canada. Nonetheless,
    this will generate substantial growth across Canada in
    industries which are suppliers to resource development.

4. Even under relatively optimistic assumptions it appears highly unlikely that Canada will face aggregate excess demand for labour (i.e., an unsustainably low unemployment rate) over the next five years.

5. If the Federal Government moves aggressively to balance its budget (through energy taxes and other vehicles), slack labour markets at the aggregate level could persist until 1990.

6. While no excess aggregate demand problems are foreseen, the anticipated evolution of the sex structure of the labour force, and the regional and industrial patterns of growth will generate requirements for considerable adjustments within labour markets. Penetration into non-traditional roles by female workers, relocation of labour from east to west within Canada, and occupational training for particular skill sets needed for high-growth industries will be major facets of labour market changes.

7. The slowing of the number of new entrants into the labour force may reduce the adaptability of labour supply.

8. The automatic adjustment processes within the labour market (in particular the wage rates) are subject to a number of limitations. Policy formation should be conducted with the need for adjustment kept in mind, and the implications of policy upon the automatic forces of the market place duly considered. If the Canadian economy is not able, or is not allowed, to make the requisite adjustments, shortages of particular classes of labour supply in particular

geographic regions may impede the realization of the aggregate economic growth potential.

9. The analysis of various risks and opportunities suggest that changes in the behaviour of the economies of our trading partners can have a significant, cumulative impact upon Canadian labour markets. The goods-producing sectors are likely to be proportionately more affected in the short run, with all sectors affected in the long run. The cancellation of major investment projects would have immediate impact on construction employment and employment in industries which supply goods or services to investment. Tight monetary policy was shown to have widespread negative effects on real output, resulting in a long run lower level of aggregate labour demand.

10. The decade of the 1980s should <u>not</u> be viewed with extreme pessimism. Real disposable income per capita will be 20.7% to 26.5% higher in 1990 compared to 1980. It is likely that between 2.2 and 2.6 million new jobs will be created. Canada will remain one of the fastest growing countries in the industrialized world.